

**IMPACT OF STATE FRAGILITY ON CAPITAL FLOWS AND ECONOMIC
GROWTH IN NIGERIA**

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ABSTRACT

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Keywords: State Fragility, Capital flows, Economic Growth, Autoregressive Distributed Lag

This thesis aims to investigate the impact of state fragility on capital inflows and economic growth in Nigeria over the period 1980-2015. In line with existing studies, it adopts an augmented neoclassical growth model where capital is divided into domestic and foreign capital inflows (FDI, ODA and Remittances). Using an autoregressive distributed lag (ARDL) bounds testing approach to co-integration, significant long-run relationship was confirmed between state fragility, capital flows and economic growth. The results reveal domestic capital to be very significant and contribute positively to economic growth. Similarly it was observed that remittances remain a very crucial form of capital flow to Nigeria and that the presence of state fragility makes it more significant. For ODA a positive contribution to economic growth was observed, however, the presence of state fragility renders it insignificant. In the case of FDI, the study found a negative relationship between FDI and economic growth albeit insignificant. However, the presence of state fragility makes it significant but still negative. A negative relationship was also observed between state fragility and economic growth. These findings, implies that while the issue of state fragility needs to be addressed and concerted efforts put into building state resilience, not just for the direct impact of state fragility on the economy, but also its impact on the economy through other channels such as capital flows.

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DEDICATION

To the memories of my late Grandmothers and Mrs Beulah Adetona

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ABBREVIATIONS

ADF	Augmented Dicky Fuller
AERC	African Economic Research Consortium
AIC	Akaike information criterion
ARDL	Autoregressive Distributed Lag
DFID	Department for International Development
DK	Domestic Capital
DW	Durbin-Watson
EWA	Equal Weight Average
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMM	General Method of Moments
ICRG	International Country Risk Guide
IMF	International Monetary Fund
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PCA	Principle Component Analysis
PP	Philips Peron
SC	Schwartz Criterion
VAR	Vector Autoregressive
VECM	Vector Error Correction
WGI	World Bank Governance Index

CHAPTER 1: IMPACT OF STATE FRAGILITY ON CAPITAL INFLOWS AND ECONOMIC GROWTH IN NIGERIA: INTRODUCTION

This chapter provides an introduction to the thesis. It discusses the motivation and states the problem identified. It outlines the objectives and research questions to be addressed by this thesis, as well as the methods to be utilised in achieving the objectives. It also highlights the contribution of the study as well as the structure of presentation for the rest of the thesis.

1.1 Introduction

Fragile states pose a dilemma for the development community, at research, policy and practice levels (Carment et al., 2009). These countries present not only some of the most serious and urgent development needs in the world but the most difficult environments for conventional economic theories and assumptions (Chandy, 2011). According to the Organisation for Economic Co-operation and Development (OECD) (2013) report on fragile states, there are about forty-seven countries that are classified as fragile, which is quite high considering the need for countries to begin the transition from development to sustainability. This reveals the importance of the issue of fragility for global growth and development in this age of globalisation. About a decade ago, most of the fragile countries were low-income economies, but recent development has seen about half of them (21 out of 47) become middle-income economies, albeit lower middle income (OECD, 2013).

Perhaps, more than any time in this century, there is a consensus that policies aimed at economic growth, such as balanced budget, general macroeconomic and political stability are of much importance (Mlambo and Oshikoya, 2001; Blanchard, Dell'Ariccia, and Mauro, 2010). Organisations such as the World Bank and the

International Monetary Fund (IMF) have continued to prescribe market-oriented policies to the developing world. It is expected that the sub-Saharan region, in particular, will sustain and increase its growth trajectory with increased levels of market involvement and democratisation in the region. It is important to note that, as crucial as market-driven growth is to the region for its efficiency benefits, there is a need for strong institutions and governance to regulate market excesses as well as conducive social and economic environment, the absence of which characterises the fragile states.

The state fragility concept is an elusive one (Ferreira, 2017). It has been defined in several manners by various international organizations. For example, the UK Department for International Development (DFID) defines fragile states as those where the government cannot or will not deliver core functions to its people (DFID, 2005). The condition of fragility has been associated with various combinations of dysfunctions: inability to provide basic services and meet vital needs, unstable and weak governance, persistent and extreme poverty, lack of territorial control, and high propensity to conflict and civil war (Carment et.al, 2008). The relevance of fragility is particularly pronounced in areas of the world, such as sub-Saharan Africa (SSA), where fragility appears to be widespread. Bertocchi and Guerzoni, (2012) among other studies explained state fragility along the lines of continued socio-economic and political instabilities. In essence they implied state fragility to be the presence of a combination of social, economic and political instabilities in a country, although in no given proportions. Other pivotal studies that have defined state fragility along these dimensions of instabilities include (Fund for Peace, 2015 and OECD, 2016).

This socioeconomic and political environment raises questions relating to the growth experience of fragile countries in the region, the drivers of the growth, and the role of

capital flows in enhancing growth in these countries. These issues are important given that about three-quarters of African countries largely those of the sub-Saharan region are fragile (OECD, 2013). Despite this status, some of these countries are experiencing growth, which challenges theoretical expectations of a negative state fragility impact on growth. For instance, economies like Angola, Nigeria, Ethiopia, and Rwanda have been among the fastest-growing economies of the past decade. This rapid growth has led to the graduation of a number of sub-Saharan Africa economies to middle-income economy status with Nigeria being a leader in the group (OECD, 2013)¹.

Despite being at the core of the discourse on fragile states, literature on the link between state fragility and economic growth is only just emerging, and mostly within the context of cross-country analysis (Bertocchi and Guerzoni, 2012 and Ferreira, 2018). Although existing growth theories do not necessarily account for the role of state fragility, these recent studies have relied on augmenting simple neoclassical models with measures of state fragility to capture its impact on economic growth. Some studies along the same spectrum have focused on proxies of various dimensions of state fragility, from which inferences can be drawn such as the relationship between political instability and economic growth (Aisen and Veiga, 2010). Other studies have investigated economic implications through indirect channels such as how state fragility affects the contribution and interaction of capital flows in driving economic growth (Mallaye and Yogo, 2011). Bertocchi and Guerzoni (2011) highlighted that empirical studies can focus on the direct impact of fragility on economic growth and development, and indirect impact through capital flows. According to Ikpe (2007), looking at only state fragility is insufficient to explain

¹ although the middle-income class is now further divided into upper and lower

economic growth. Its indirect implication can be very useful for efficient policy making.

In general, the literature on state fragility and economic growth can be broadly divided into two: direct and indirect. As earlier mentioned, while these two channels (direct and indirect) have been established in the few available literature on state fragility and economic growth, they have largely only been tested within the cross country context. Very little attention has been placed on time series context². Theoretically, fragility would have at the minimum, a marginal negative impact on economic growth. An emerging consensus, however, within the available empirical literature is such that suggests no clear-cut robust negative impact of state fragility on economic growth. It alters or reduces the potentials of theoretical growth drivers.

This study investigates the impact of state fragility on capital flows and economic growth using time series data for Nigeria from 1980 to 2015. It does this by first investigating the trend and dynamics of state fragility in Nigeria over the period of study. It then introduces measures of state fragility into a simple neoclassical model, where capital is subdivided into domestic and foreign capital inflows. These capital inflows include; foreign direct investment, official development assistance and remittances. The measure of state fragility was introduced at both aggregate and selected disaggregated dimensions of state fragility to understand their impact on economic growth. These dimensions are economic dimension, social dimension and military and political dimension. For econometric estimation, the study made use of the auto regressive distributive lag estimation technique.

² The importance of time series context will be discussed in subsequent sections.

1.2 Motivation for the Study

According to AERC (2015), recent growth in the sub-Saharan African region has not been accompanied by structural transformation or reduction in unemployment levels. World Bank (2015) noted that although the region has a lot of growth potentials, it has been unable to optimise these potentials due to instabilities of various forms. For example the World Bank (2015) report highlighted that prospects in South Africa have declined due to difficulties in overcoming an electricity problem. In Angola, the challenge has been the sharp drop in the price of crude oil, while Nigeria has combined both an electricity supply challenge and the sharp drop in oil prices. On the domestic front, risks associated with political and security instabilities, social instabilities such as ethnic conflicts, youth bulge and fiscal vulnerabilities dominate. It however, becomes crucial to understand what drives growth in an economy faced with these myriad of challenges.

Kaplan (2015) opined that the prevalence of fragility in most African economies explains the suboptimal growth experienced in the region. Interestingly, quite a lot of the existing models on economic growth in the literature tend to ignore fragility and its manifestations in fast-growing African economies. He stressed that some of the largest and longest standing subnational armed conflicts, other large-scale violence, and other manifestations of fragility have been exhibited by hitherto relatively stable middle income, fast-growing economies or economies with huge growth potentials. This deflects the attention of external observers from the internal strains of fragility within such economies. The World Bank (2015), for example, listed countries such as Jordan, Kenya, Guinea, Nepal, Ukraine, Lebanon and Nigeria among others that

often fall into this category. Kaplan (2015) went further to explain the term “fragile but controlled contexts” citing cases of pre-2011 Syria, Saudi Arabia and Uzbekistan.

Perhaps economic growth has a way in which it veils fragility and gives a wrong external perception on economies. This led to calls by organisations such as the OECD for the exclusion of income levels as an input in fragility measurements, nor should it be used for classification in dealing with fragility. Perhaps the reverse is the case, where capital inflows and growth can be hindered by fragility. According to the OECD (2013), recent periods have seen the fragile state economies experiencing fast growth and significant levels of capital inflows (FDI, ODA, and remittances). Nigeria remains a major recipient of total FDI and remittances going to fragile states, although proportionally less for ODA (see appendix; 1.1 to 1.3) and, until recent economic slowdown, continued to experience significant economic growth levels.

The Choice of Nigeria as a fragile state of interest in this study is however premised on its economic performance in recent times despite its fragile state status. As earlier mentioned, while previous periods witnessed the concept of state fragility largely as an exclusive reserve of low-income countries, recent periods have seen some of them grow out of that classification (OECD, 2013). This growth has led to the graduation of about seven sub-Saharan Africa economies, hitherto classified as low-income, to middle-income status, albeit lower-middle income as earlier noted. However, the choice of Nigeria is premised on its growth and capital inflow attracting ability despite its state fragility status, making it a significant capital flow recipient fragile state in sub-Saharan Africa. Although in per capita terms the magnitudes of these abilities diminish.

As earlier mentioned the OECD (2013), highlights Nigeria as a leading and significant fragile state economy in the sub-Saharan African region with interesting dynamics, which will be discussed in subsequent chapter.

1.3 Problem Statement

African policymakers are increasingly becoming aware and appreciative of high-quality research in informing economic policies and decisions to drive their growth. Although there is much literature on growth in SSA at both regional and nation-state levels, (Ndulu et al. 2008; AERC, 2015), scanty knowledge exists on these issues within the framework of fragility, which has become perhaps one of the most germane issue for nation-states in the region. About 80 percent of the fragile states around the globe are from the sub-Saharan African region (OECD, 2013). These Fragile states are characterised by deep structural and economic constraints (Maier, 2010).

The prevailing conditions in fragile states (weak human and physical capital accumulation, unstable macroeconomic environment, poor health and educational outcomes, unstable political environment, poor infrastructure) is not conducive for capital inflow, a key driver of growth. Due to their fragility, these economies often cannot mobilise domestic capital, raising questions about the growth experience of fragile states. It, therefore, becomes crucial to understand the role of state fragility in economic growth and capital inflow levels. Given the multiple sources of fragility and the reinforcing interactions among them, fragile countries find it very difficult to build resilience, and many seem to be caught in a “fragility trap”³. This makes the transition out of fragility neither simple nor rapid. For instance, it is estimated that of 26 sub-Saharan African countries identified as fragile, only 12 could be expected to become more resilient by 2039 (Cilliers and Sisk 2013).

³ A closely interlinked circle of underdevelopment, political instability or conflict, and ineffective state capacity. (see Andrimihaja et.al (2011) Avoiding the fragility trap in Africa. World Bank policy research working paper no. 5884 (<http://elibrary.worldbank.org/content/workingpaper/10.1596/1813-9450-5884>).

According to Bertocchi and Guerzoni, (2012), the state fragility concept has in recent times reached the centre stage of the economic development debate, in particular on the growth prospects of SSA. The concept of state fragility has been associated with various combinations of the social dysfunctionalities and qualitative factors (Carment, et al. 2009). The relevance of state fragility for SSA countries is underlined by the fact that they are overrepresented among fragile states, as shown by the European Report on Development (2009), which is entirely devoted to the problem of fragility in Africa. Similarly, the Global Report 2009 (Marshall and Cole, 2009), noted the continuing disorder affecting the region. The report stressed that the condition of fragility may jeopardize not just economic growth, but also capital inflows, which are crucial growth drivers.

Contemporary economic analysis is yet to fully comprehend the various forms of interaction and feedback between fragility and the economy. Most attention on fragility over the years has appeared to be coming from the humanitarian point of view. It is, however, impossible to deny that fragility defines both the social and economic atmosphere within a country. According to Maier (2010), the dimensions of state fragility broadly cover aspects of security, economic and social development as well as political representations and governance. He explained that the term “fragility” hides a spectrum of heterogeneous country experiences ranging from countries in a situation of early recovery to countries with chronic levels of underdevelopment or protracted conflict.

The key insight of economic growth theory is that high rates of accumulation of capital as well as other determinants have growth implications⁴. The critical question

⁴ Rao and Cooray (2009) present a comprehensive overview of growth determinants literature particularly for policies in developing countries.

then is how state fragility affects capital flows and economic growth. This study proposes to expand knowledge by conducting a country-specific study, as each fragile state is unique in its fragility (Fund for Peace, 2015). Faust et.al (2015) argued that there is a fragile consensus on state fragility and its implications for growth and development. They stressed that the reason for the fragile consensus is the fragile nature of the state fragility concept itself; where drivers of state fragility differ from country to country. They concluded that for policy effectiveness in fragile states, policy makers have to ensure appropriate bespoke interventions that take into consideration domestic fragility drivers. Moreover, development experts have questioned the use of a one size fits all approach in discussing issues in developing countries. Maier (2010) cautioned that the heterogeneity observed in development performance among fragile states is so vast that it is not very useful to treat fragile states as a group. Alesina et.al (2003) noted that a cross country statistical exercise is a crude way to summarize complex socio-political and economic challenges of countries. They posited a promising direction for future research, to supplement large-sample studies, would be for economist to do more case studies of economic and development issues of countries. This study, therefore, proposes to investigate the impact of state fragility on economic growth and capital inflow and their interactions in Nigeria.

1.4 Research Objectives

This study seeks to understand the impact of state fragility for capital inflow and economic growth in Nigeria. In achieving the above general objective, the following specific objectives/questions have been identified:

1.5 Research Questions

- What is the trend of fragility in Nigeria over the period of study?
- What is the impact of state fragility on capital flows and economic growth of Nigeria?

1.6 Data and Research Methodology

In covering the terms of reference in this research, econometric estimation technique will be employed.

1.6.1 Data

The study employs secondary data in investigating the macroeconomic measures of fragility, economic growth and capital inflows in the selected fragile state, for the periods 1980 to 2015. The sample size was very much dependent on data availability as published by the World Bank Data Bank at the time of conducting the research. Secondary data involves desk data collection (Saunders, Lewis, and Thornhill, 2009). Published data on macroeconomic variables can be obtained from the relevant institutions such as the National Bureau of Statistics, Budget Offices (BO), National Ministries and Central Banks, World Bank, and International Monetary Fund (IMF). The reliability and validity of these data are determined by the authority of the source of that data (Saunders, Lewis and Thornhill, 2009). In the case of this study, the thesis has relied heavily on the World Development Indicators from the World Bank databank to source for data used in the econometric analysis. To ensure that data obtained for the research are valid, the study ensured that all data was carefully examined, cross-checked and screened.

1.6.2 Methodology

In order to investigate more accurately the implications of state fragility on capital flows and economic growth, it is necessary to have a framework to decide on the variables of the study. The traditional models of growth mainly focus on two key factors as drivers of growth: technology and capital accumulation, but they do not consider the role of other qualitative factors such as state fragility. Therefore, the potential roles of such factors are largely ignored in the growth literature. In addressing this, studies that have identified the role of these qualitative factors have utilized augmented neoclassical models in addressing this challenge. Mankiw et.al (1992) opined that the inclusion of some relevant qualitative and control factors in a neoclassical model improves the model and avails the model the ability to assess the impact of such qualitative factors on economic growth. Other studies that have argued along this line using cross sectional datasets include; Jalilian et.al, 2007 and Messaoud and Teheni, 2014. Studies that have augmented neoclassical models with qualitative factors using time series datasets on the basis of country specificity are also emerging. These studies include Klobodu and Adams, 2016; Nwosa and Akinbobola, 2016; Jawaid and Saleem, 2017.

In view of the above, this study adopts an augmented neoclassical model that includes a qualitative factor, in this case state fragility to investigate the implication of state fragility on capital inflows and economic growth within a time series framework.

Econometric analysis was used to examine the impact of state fragility on capital inflows and growth in Nigeria. Data was log transformed to stabilize the variance of the series. To carry out the estimations in this thesis, evIEWS 9 was used.

1.7 Contribution and Policy Relevance of the Study

This thesis aims to contribute to the capital flow and growth literature within the context of fragile state economies using the case of Nigeria. Specifically;

- This thesis introduces state fragility into an existing growth model and thereby understands the implications of state fragility for economic growth.
- This thesis contributes to the literature within the economic growth framework using a time series approach to provide explanations to the impact of state fragility on the economy of Nigeria. State fragility has proven to be a multifaceted issue that by concentrating on a specific area, this study can reach a more meaningful conclusion and more useful policy implications. By restricting the attention to Nigeria, the study can factor into its fragility measure specific economic, social, and political characteristics of Nigeria.
- This thesis also provides a framework to inform future studies on fragile state economies.

The economic environment in fragile economies including Nigeria is not favourable for capital inflows which may be a key growth driver. The international policy community has identified the uniqueness of these economies and has continued to call for developing economic models that suit these economies and their peculiarities. While a lot of studies might have been done in this area, very little knowledge exists on this subject in the context of fragility.

This study proposes to situate fragility into existing theoretical growth models and discussions to evaluate its impact on Nigeria. It also adopts a country-specific context which may give a better insight into the country's fragility as against the one size fits all ranking system approach commonly used. This study, becomes apposite

at a time when Nigeria is trying to boost its foreign capital inflows as a measure to fast track its economic growth.

1.8 Thesis Structure and Organisation

The study is organised into six chapters with each chapter comprising appropriate sections. The first Chapter provides an introduction to the thesis, highlighting the statement of problem and motivation for the study, its objectives and research questions as well as the contributions and policy implications of the study. The rest of the thesis is organised as follows. Chapter two seeks to provide an overview of Nigeria along its socio-political and economic structures, being the main context of this study. It aims to provide a contextual background to situate the analysis in the following chapters of this study.

Chapter three addresses the first objective of this thesis. It aims to conceptualise state fragility in the context of Nigeria within the framework of existing literature. It focuses on indexing Nigeria's state fragility to provide a measure of state fragility to be used in investigating whether state fragility really matters for capital flow and economic growth in Nigeria. In doing this, it examined seminal works on state fragility. It identified the various forms of the dimension of state fragility and ongoing arguments on the state fragility concept. It highlights the consensus on the multidimensional approach to being adopted in dealing with fragility. It went further to index state fragility for Nigeria using an equal weight approach and a multivariate approach (principal component analysis).

Chapter four undertakes a review of the relevant literature including theoretical and empirical reviews concerning the theories of economic growth their evolution and the importance of capital to economic growth. Empirical research that has been done on

both cross-country and country econometric analysis is systematically reviewed and provides a framework for this study.

The fifth chapter focuses on the second but core objective of this thesis which is to investigate the impact of state fragility on capital flows and economic growth in Nigeria. It adopts a simple neoclassical growth model, which was estimated with the use of the Autoregressive Distributive Lag (ARDL) estimation technique. The chapter utilised a stepwise approach to investigate this relationship, and the results were presented. The chapter ends by discussing the results found and provides a conclusion on the impact of state fragility for capital flows and economic growth in Nigeria. The chapter found a positive relationship between remittances, ODA and economic growth, although in the case of ODA, it was not very significant. However in the case of FDI a negative relationship was observed with economic growth. The chapter found a negative relationship between state fragility and the economic growth. Also and more interestingly is that the chapter found that the introduction of state fragility altered the contribution of capital flows to economic growth unfavourably. The chapter concludes that state fragility has direct negative impact on economic growth, however and more importantly, it has indirect impact on economic growth through altering contributions of theoretical growth drivers such as capital flows adversely.

The thesis concludes in chapter six, with a summary of major findings, policy implications of results and recommendations, issues for further research and the conclusion of the thesis.

CHAPTER 2: AN OVERVIEW OF NIGERIA

This chapter seeks to provide an overview of Nigeria along its socio-political and economic structures, being the main context of this study. It aims to provide a contextual background to situate the analysis in the following chapters of this study.

2.1 Introduction

An increasing number of countries in sub-Saharan Africa (SSA) are showing signs of economic progress, reflecting the implementation of better economic policies and structural reforms. These countries are giving greater priority to public spending on human capital development and other basic social services. In addition, there is a growing movement toward more open and participatory forms of government that encourage cooperation between the state and civil society.

Nonetheless, the economic, social and political situation in the region remains fragile and vulnerable to domestic and external shocks, and the region has a long way to go to make up for the ground lost over the past decades (Hopkins, 2014). Despite some upturn in economic growth rates, poverty is still widespread and in many parts of the continent extremely acute. Investment remains subdued, limiting efforts to diversify economic structures and boost growth. Furthermore, a number of countries have only recently emerged from civil wars that have severely set back their development efforts while, sadly, new armed conflicts have erupted in other parts of the continent. These conflicts and other adverse factors, notably poor weather and topographic conditions and deterioration in the terms of trade, have led to some loss in economic momentum in the region in more recent years. These issues have however shaped the context of these countries and have implications for their economies. Elbadawi and Sambanis (2000) highlighted that the SSA is a heterogeneous region made up of countries with different peculiar issues.

The aim of this chapter is therefore to provide an overview of Nigeria within the scope of the socio-political and economic issues that shape the country. The chapter provides a contextual background to situate the analysis in the following chapters of this study. This chapter presents an overall view of the history of the Nigeria. In addition, it collectively lays out a broad framework for thinking about different issues in regard to socio-political and economic context of Nigeria. Hopkins, (2014) stressed that in explaining the economic performance or otherwise of West African countries, it is impossible to ignore the historical perspectives that have shaped the evolution of countries of the region. Loosely speaking, the history of Nigeria can be divided into three main periods, i.e. the pre-colonial, colonial and post-colonial eras. Nevertheless, this chapter will focus mainly on post-colonial era history of Nigeria in situating the context of the study. The general aim here is therefore to provide background information on crucial factors on social, to political and macroeconomic issues that make up the contextual situation of Nigeria.

The structure of the chapter is as follows. Following this introduction, Section 2.2 starts with a brief history and geography of Nigeria. Section 2.3 discusses the social structure of Nigeria, and this is followed by Section 2.4, which analyses the Political and Security Structure of Nigeria. The subsequent section 2.5 presents an overview of the Nigerian economy covering issues of the macroeconomic environment and capital flow to the country. Section 2.6 discusses Nigeria as a fragile state. Finally, Section 2.7 provides a summary and some concluding remarks.

2.2 Brief History and Geography of Nigeria

Prior to 1914, the British colonial masters ran two protectorates namely Northern and Southern protectorates. On the 1st of January 1914, following the recommendations

of Sir Frederick Lugard, the two protectorates were amalgamated to form the Colony and Protectorate of Nigeria under a single governor-general resident in the city of Lagos in the Southern Protectorate.

Nigeria was granted independence on the 1st of October 1960 from the colonial masters. A new constitution established a federal system with an elected prime minister and a ceremonial head of state. Following a UN-supervised referendum, the northern part of the Trust Territory of the Cameroons joined the Northern region in June 1961, while in October the Southern Cameroons united with Cameroun to form the Federal Republic of Cameroon. On October 1, 1963, Nigeria became a republic. Nnamdi Azikiwe became the first president of the country, although as prime minister Alhaji Tafawa Balewa was still more powerful. Also, although Nigeria had in 1963 adopted a republican constitution, but it elected to stay a member of the Commonwealth.

Nigeria is located on the western coast of Africa. It has a land mass of about 923,768.0 square kilometres with an estimated population of over 180,677,058 million people in 2014. The countries land mass stretch from the Gulf of Guinea on the Atlantic coast in the south to as far as the Sahara Desert in the north. Nigeria is boarded by the Niger and Chad Republics to the north, the Cameroon Republic to the east, and the Benin Republic to the west (CBN, 2014; NPC and ICT International, 2014). Nigeria has a diverse geography, with climates ranging from arid to humid. Nigeria is bordered to the north by Niger, to the east by Chad and Cameroon, to the south by the Gulf of Guinea of the Atlantic Ocean, and to the west by Benin.

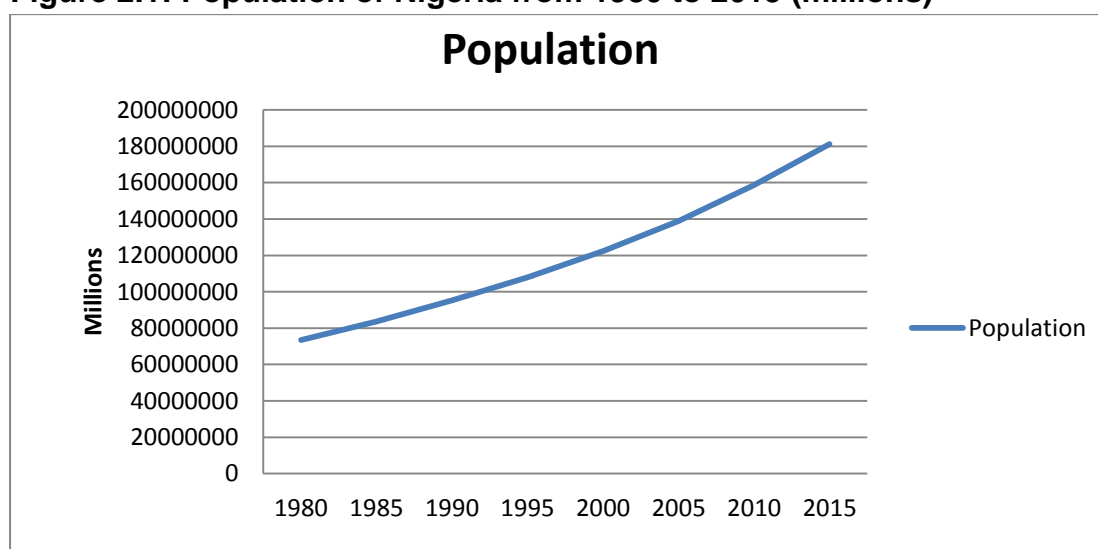
2.3 Overview of the Social Structure of Nigeria

Nigeria is a federation with different ethnic nationalities, and currently structured into 36 states, a Federal Capital Territory (FCT), 774 local government areas and six (6) geo-political zones. These geo-political zones were based on cultural affiliation, language and contiguity of the states and local government areas. The zones are South-South, South-West, South-East, North-Central, North-East and North-West (Adeyemi, 2013).

2.3.1 Population of Nigeria

Nigeria, currently ranks seventh in the world, and is the most populous nation in Africa. In 2015, the population was estimated above 180 million people⁵. Although when census was last conducted in 2012 by the Nigeria National Bureau of Statistics (NBS), the total population of citizens in Nigeria was 166.2 million people (NBS, 2014). Figure 2.1 below presents the trend of population in Nigeria in millions from 1980 to 2015.

Figure 2.1: Population of Nigeria from 1980 to 2015 (millions)

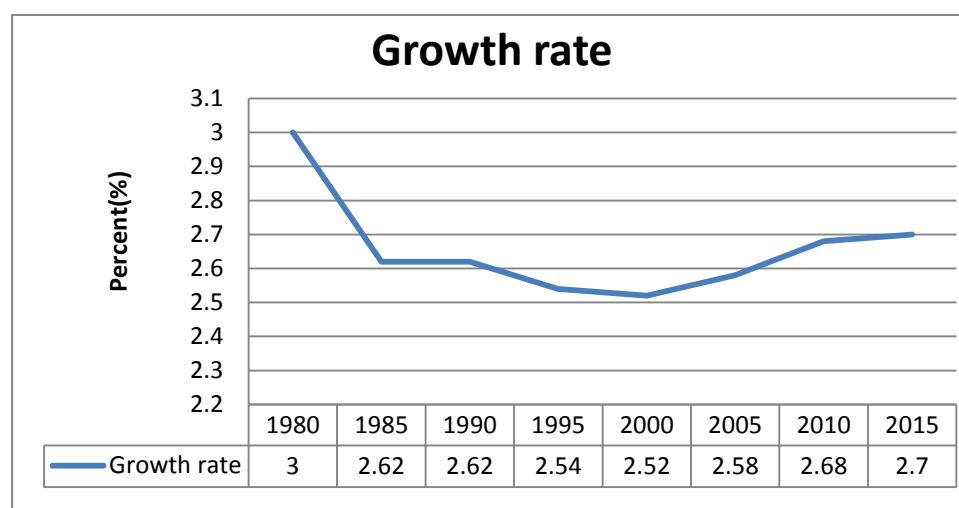


Source: United Nations World Population Prospects (2017)

⁵ [World Population Prospects \(2017\)](#) - United Nations population estimates and projections.

The population in Nigeria has continued to grow over the years. As at 1960, when the country was declared independent from the United Kingdom, the country recorded an estimated 45.2 million people; currently it is estimated to have exceeded 180 million over the past 50 years of existence. The entire population of Nigeria accounts for about 2.35% of the world's population. This means that about 1 out of every 43 people are Nigerians. The country has continued to grow at an average rate above 2.5 % over the years and is estimated to have doubled its current population by 2050 (United Nations, 2017). Figure 2.2 below presents the growth trend of population in Nigeria from 1980 to 2015.

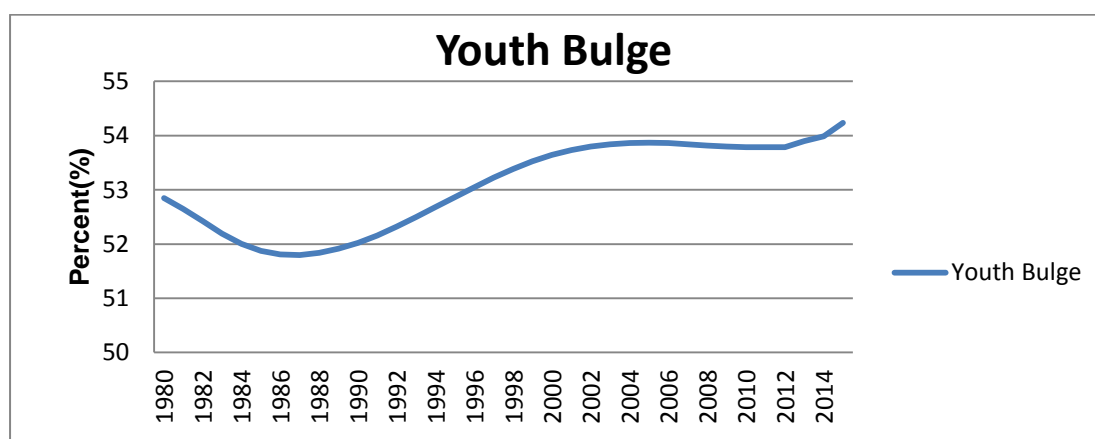
Figure 2.2: Population Growth Rate of Nigeria from 1980 to 2015 (%)



Source: United Nations World Population Prospects (2017)

More than half of Nigeria's population is youthful. Figure 2.3 below presents the youth bulge as a percentage of total population in Nigeria. From the chart the fraction of the youth in the country as maintained an upward trend and as such the country can be said to be a youthful country with huge labour potentials, but when faced with unemployment levels, this potential labour become potent perpetrators of crime and violence.

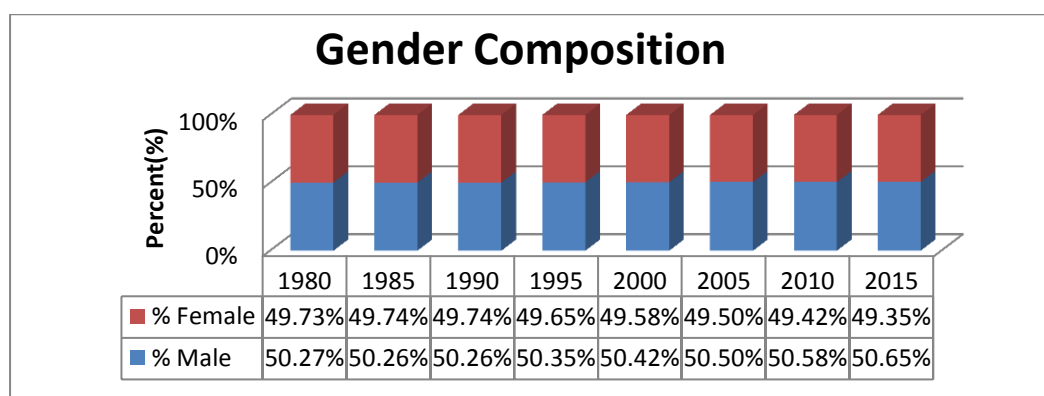
Figure 2.3: Youth Bulge as percentage of Population in Nigeria from 1980 to 2015 (%)



Source: World Bank Data Bank 2016.

The general expectation is that rising ratio of youth population relative to other age groups would stimulate economic growth and development, otherwise known as demographic dividend. The youth bulge has the potential to propel economic growth and human development; however, this is not automatic (Olaniyan, Soyibo and Lawanson, 2012). For example, the high rate of risky behaviour associated with the youth population has led many to conclude that the youth bulge could be a problem rather than an asset to the society (Urdal, 2006). Other studies have argued that the structure of the composition along gender can give insight as to whether a youth bulge will be linked to high rate of crime or not (Omoju and Abraham, 2014). Figure 2.4 below presents the gender composition of Nigeria.

Figure 2.4: Gender Composition of Population in Nigeria from 1980 to 2015 (%)



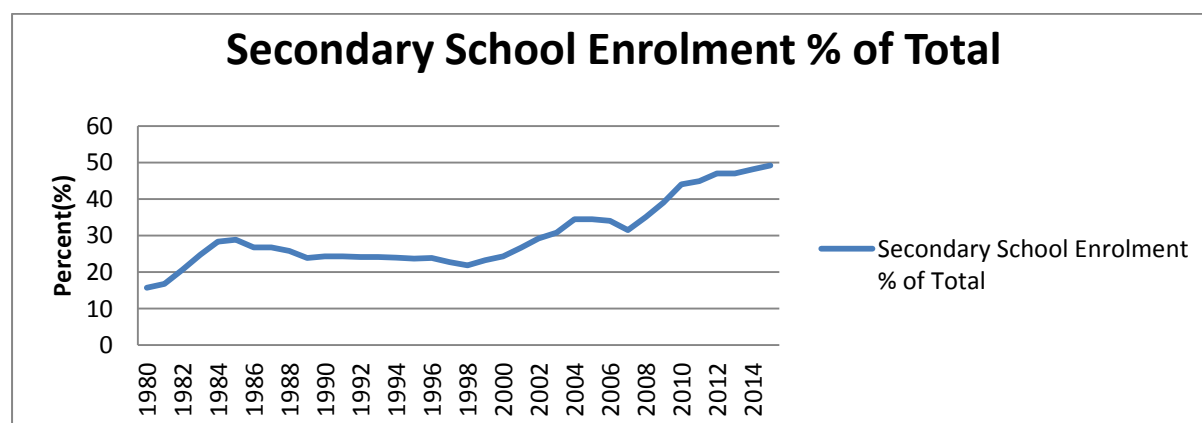
Source: United Nations World Population Prospects (2017)

The split between the males and the females in Nigeria are quite even. Men take the edge in numbers, but not by much. There are, according to estimates, about 1.04 males to every 1 female in the country.

2.3.2 Nigerian Quality of Life

The life expectancy in Nigeria is, unfortunately, the lowest in all of West Africa. According to the latest World Health Organisation, WHO (2018), life expectancy in Nigeria, is 55 Years approximately. The report revealed Nigeria has a life expectancy ranking of 178 out of 192 ranked countries across the world. This very low number can be attributed to the fact that the country has a lot of health issues. The report stressed further that, In terms of access to clean drinking water, 68.5 percent have improved means of access while 31.50 percent still struggle to get clean water. Similarly, when examining the access to sanitation facilities, only 29 percent of the entire population of Nigeria have improved sanitation access as compared to the 71 percent that are still struggling. The average number of years spent in school in Nigeria is approximately 9 years, with national literacy rate of only 49.6 percent by 2015 according to (World Bank, 2016).

Figure 2.5: Secondary School Enrolment % of total in Nigeria from 1980 to 2015



Source: World Bank World Development Indicators (2016)

2.3.3 Ethnic and Religious composition of Nigeria

Nigeria as a nation is an aggregation of several nationalities. In real terms, it is a pluralistic and multi-faceted society, both in terms of religion and composition⁶. The official language of Nigeria is English, but the country does feature multiple languages. The most common non-English languages include the language of Hausa, the language of Yoruba, and the language of Igbo. Those three languages are the most widespread, apart from the language of English. The overall religious aspect of Nigeria is generally split between Christianity and Islam. Most Nigerian Muslims are Sunni and are located in the northern parts of the country while the Christian population is located mainly in the middle and the southern areas of the country. There are more than 250 officially identified major ethno-lingual groups (National Bureau of Statistics 2015). However, it has over 450 different ethnic groupings including sub ethnic groupings (Adeogun, 2006).

Despite the multiplicity of ethnic groups there are three major ethnic groups namely Hausa-Fulani, Yoruba and Igbo. Other significantly large groups include; Ijaw, Kanuri, Ibibio, Tiv among others. The Hausa and Fulani are the predominant ethnic groups in the northern region of Nigeria. Though the groups originated in different parts of West Africa, religion, intermarriage and adoption of the Hausa language by the Fulani have unified the groups over time (Gordon, 2003). In contemporary Nigerian society, they are often referred to collectively as Hausa-Fulani. The Hausa-Fulani is the largest of the major ethnic groups. They have been politically dominant since Nigeria's independence from Britain in 1960. Islam is a key component of their ethnic identity and continues to inform their role in modern Nigerian society and

⁶ Tekena N.Tamuno, Seperatist Agitations in Nigeria Since 1914, in Gregory Maddox and Timothy K.Welliver (Eds), Colonialism And Nationalism In Africa (A Four-Volume Anthology of Scholarly Articles, vol.3,Garland Publishers,New York,1993,pp196-197

politics. Their culture is deeply patriarchal and patrilineal. In recent years, Hausa-Fulani were instrumental in adopting and upholding Sharia, a system of Islamic law, in 11 of the country's northern states (Ado-Kurawa, 2016).

The main ethnic group in south-eastern Nigeria is the Igbo. It represents some of the staunchest opponents of the Sharia law. In many northern Hausa-Fulani-dominated states, minority populations of Igbo claim to have been unfairly targeted by laws that do not pertain to their faith (Ojukwu, 2009). Unlike neighbouring Hausa and Yoruba cultures, Igbo society was traditionally decentralized and non-hierarchical (Dodo-Williams and Milano, 2018). This made its members easier converts for European missionaries and today most Igbo are Christian. Under British colonial rule, many Igbo served in government and military roles and were later key players in Nigerian independence. But over the last few decades the group has become less politically dominant.

Discovery of large oil reserves near Igboland in the early 1960s and proposed redistricting led many in the group to fear that they would be cut out of revenues from the country's natural resources. In 1967, an Igbo secessionist movement in Biafra state led to a 30-month war with the Nigerian government, in which hundreds of thousands of Igbo starved to death. After the war, the Igbo were reintegrated into the Nigerian society, but in a more marginalized role. Despite lingering ethnic tension, they now play an important part in south-eastern Nigeria's oil trade. Although they have often struggled to coalesce around a single candidate for the presidency, however, recent periods has seen a resurgence of secessionist ideologies in the region and is heavily used for political gains. The sincerity and potential actualisation of this self-actualisation remains heavily debatable in public opinion.

In the case of the Yoruba's, they are one of Nigeria's most urban ethnic groups. Historically, their culture centred on densely populated city-states each controlled by a King known locally as "oba". Yoruba form the majority in Lagos, the second most populous city in Africa. In modern day Nigeria, Yoruba speakers do not always identify with their larger ethnic group, but rather the many smaller Yoruba-speaking communities (Forde, 2017). This pluralism extends to Yoruba views of religion. As Islam and Christianity spread to Yorubaland over the past few centuries, the group embraced both faiths alongside its many traditional and animist beliefs. This blend and acceptance of religion survives in modern times and has mitigated some religious conflict in places where Yoruba form the majority. Like the Igbo, Yoruba held important roles in the British colonial government, participating significantly in both political and economic life. Since independence, the group has been overshadowed by the more numerous and dominant Hausa-Fulani. However, in 1999 a Christian Yoruba named Olusegun Obasanjo became Nigeria's president and was re-elected for a second term in 2003.

In recent years, the Ijaw have agitated for more political franchise in Nigeria (Watts, 2016). Although they are the fifth largest ethnic group in the country, their traditional lands in the Niger River Delta are some of the country's most oil rich. Oil exploration has had devastating consequences on Ijaw territory and subjected the group to numerous ecological hazards (Ikporukpo, 2004). Mismanagement of oil revenues has kept much of the wealth from returning to the local communities and causes a lot of tension. Despite these ongoing tensions, 2007 saw an Ijaw take a major political office for the first time. Goodluck Jonathan, an Ijaw, became a vice presidential candidate for Alhaji Umaru Musa Yar'adua, and became president after the demise of Yar'adua in 2010 and subsequently won the 2011 presidential elections.

The Nigerian government has worked out tentative power and resource sharing arrangements to help ensure that its many ethnic groups have some say in how the country's natural resource wealth is spent. But major questions about ethnicity and how to balance the many competing interests still impede societal cohesion. Cities remain largely segregated along ethno-religious lines, and confrontation between ethnic groups is common. Often, ethnic clashes in one part of the country can set off a chain of reprisal riots and attacks in other parts of the country. All major ethnic groups have formed militias to protect their own interests and perpetrate violence on other groups. While illegal, these vigilante groups continue to act with impunity for lack of stringent law enforcement.

2.4 Overview of the Political and Security Structure of Nigeria

There are numerous manifestations of ethnic identity politics in Nigeria, either caused by the structural imbalance of the federation or competition for scarce resources including quest for political power (Salawu and Hassan, 2011).

As a result, fierce political competition becomes the focal point for resource allocation; meanwhile, deadly means are used to achieve this objective. Since independence the country has often oscillated between Military and democratically elected civil regimes. Prior to the latest return to civilian democratic regime in 1999, which produced Chief Olusegun Obasanjo a southern Christian as president, many have complained and called for the termination of Hausa-Fulani oligarchy that are believed to have controlled political power since independence in 1960.

In 1966, the first military coup was not intended to produce Aguiyi Ironsi as the head of state. The coup was led by group of junior military officers, their aim was strict political re-orientation of Nigeria, the coup was foiled and the military was left with no

other option than to appoint the most senior officer as the head of state, by default Aguiyi Ironsi became the leader. In 1976, Obasanjo became the head of government after General Murtala Mohammed was assassinated in a Dimka led military Coup, again by default. Some have also argued that the second coming of Obasanjo in 1999 was seen as a compromise candidate and safe choice for the northern oligarchy after complications of the Chief Moshood Abiola famous June 12 ethnic riots (Kew, 2010). In the nations over fifty years of independence, persons from the south have only ruled for seventeen years while the rest have been for persons from the North.

Table 2.1 Breakdown of Ethnic Composition of Past Nigeria Leaders since Independence

Head of Government	Duration	Source of Power⁷	Region/state/ethnicity
Tafawa Balewa	1960-1966	Democracy-election	North/Hausa-Fulani
Aguiyi-Ironsi	1966 (Jan-May)	Military-default	South/Igbo
Yakubu Gowon	1966-1975	Military	North/minority
Murtala Mohammed	1975-1976	Military	North/Hausa-Fulani
Olusegun Obasanjo	1976-1979	Military-default	South/Yoruba
Shehu Shagari	1979-1983	Democracy-election	North/Hausa-Fulani
Muhammad Buhari	1983-1985	Military	North/Hausa-Fulani
Ibrahim Babangida	1985-1993	Military	North/Hausa-Fulani
Ernest Shonekan	Aug 27-Nov 1993	Appointment	South/Yoruba
Sanni Abacha	1993-1998	Military	North/Hausa-Fulani
Abdul-Salami Abubakar	1998-1999	Military	North/Hausa-Fulani
Olusegun Obasanjo	1999-2007	Democracy-Election	South/Yoruba
Umar Yardua	2007-2010	Democracy-Election	North/Hausa-Fulani
Goodluck Jonathan	2010-2015	Democracy-Election	South/Ijaw
Muhammad Buhari	2015-	Democracy-Election	North/Hausa-Fulani

Source: Nigerian Tribune Newspaper, Results at a Glance, Wednesday 25th April, 2007

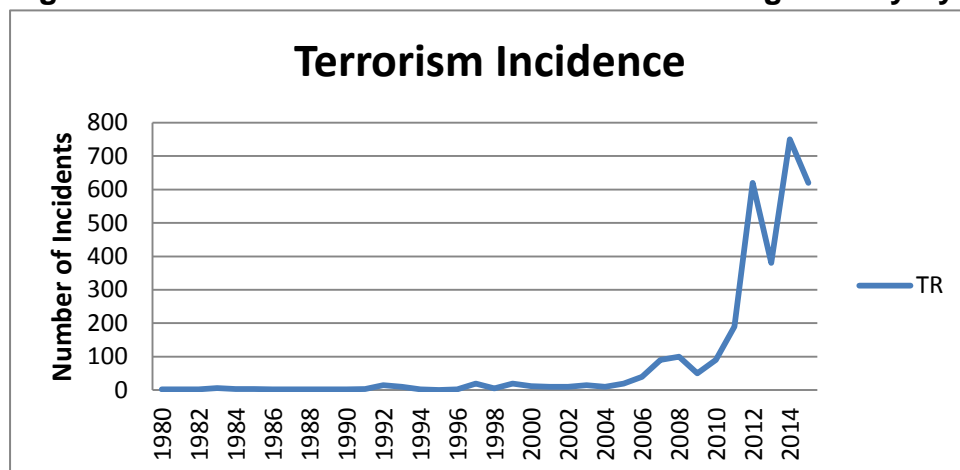
⁷ Tunde Babawale Op cit pp21

As depicted in the table above, apart from the six months of default rule of Aguiyi Ironsi, no Igbo has ruled Nigeria, this could be one of the reasons why the Igbo are still calling for secession from the federation. The Igbo fought against the federation during the first republic and today through Movement for the Actualization of the Sovereign State of Biafra (MASSOB) and more recently, the Indigenous People of Biafra (IPOB) are calling for the actualization of Biafra. Another important feature of the table above is that apart from Yakubu Gowon (Military/North) and Goodluck Jonathan (Democratic/South) no minority ethnic group has led Nigeria.

The reign of Gowon, a Christian minority from northern Nigeria was seen as a matter of convenience for the north, he was given the privilege by the Hausa-Fulani oligarchy on the simple calculation that, since Gowon was a northern Christian, it will be logical and politically viable to argue that the civil war in Nigeria was not between predominantly Christian Igbo and predominantly Muslim north. The Igbo was presumed by the north, would argue that the civil war is between predominantly Islamic north and Christian Igbo (South) which would draw sympathy for Biafra and would ultimately change the course of the war. This was a smart political move by the north to use Gowon to argue, otherwise in order to deny the Igbo the sympathy of the Western nations. Similarly, the unexpected death of Musa Yaradua (North/Hausa-Fulani) led to the emergence of Goodluck Jonathan (Minority, South/Ijaw) as acting and subsequently president of Nigeria in 2011 elections. Historically, ethnicity has played a major role in Nigerian political process.

In recent times, Nigeria has ascended the ranks as one of the most active terror destinations in the world; in terms of frequency and sophistication of attacks.

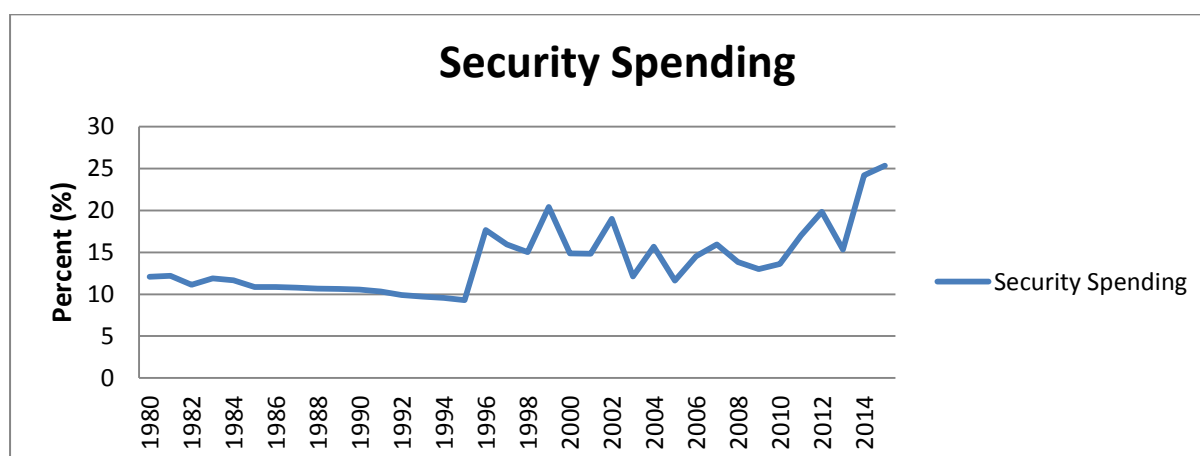
Figure 2.6: Total terrorism incidents in Nigeria by years, 1980-2015



Source: Adapted from Global Terrorism Database (2015)

As depicted in Figure 2.6 above, the total number of terrorist attacks in Nigeria between 2000 and 2015 rose astronomically. The trend appears to be increasing in recent times in spite of increased government security spending as depicted in Figure 2.7 below. For example, in 2014, the president had requested the approval of the House of Assembly to borrow and spend an additional \$US1 billion on counter-terrorism efforts in addition to the 2014 budgetary allocation and the request was approved by the National Assembly.

Figure 2.7 Security Spending as percentage of government expenditure in Nigeria from 1980 to 2015 (%)



Source: Central Bank of Nigeria Annual statistical report 2015.

Terrorism related activities are not altogether new in Nigeria. Since the post-independence era, the chequered history of the country can be characterized by several episodes of internally motivated crisis (Chuku et.al, 2017). Specifically, these terrorism-related crimes have been escalated by the multi-faceted political and religious demands of different competing groups, and for reasons of ethnic fractionalization. Some of the most contentious issues include: the demands for appropriation of oil rents, reforms in fiscal federalism and political restructuring, which has primarily contributed to the emergence of militia and terrorist groups in the southern and northern regions respectively. Although in recent times, what is generally recognized as terrorism in Nigeria are the activities of the Boko Haram sect. A group whose activities is localized to the North-Eastern region and neighbouring countries, targeting innocent civilians, religious and public places, government officials, and security forces. It is only one of many formal and informal groups engaged in what qualifies as terrorist activities. Tonwe and Eke, (2013) presented an anatomy of their operations.

The relevance and strength of the group has risen quickly from being a regional phenomenon to attaining global status. This is confirmed by the recent trends that show links between Boko Haram and ISIL, an organization to which they had earlier pledged their allegiance. This increasing relevance and spread also imply stronger and more significant influence on the political and economic fundamentals of the Nigerian economy, begging for answers to questions concerning the underlying factors behind the origin and growth of terrorism in Nigeria, the consequences of government counter-terrorism activities, and the strategies for economic insulation.

It is generally believed that the nature of terrorism in Nigeria is mostly elite-motivated, originating from the fallout of political competition for resources.

Advocates of this theory argue that it is very difficult for perpetrators of terrorism, who are often poor and uneducated rural dwellers, to mobilize resources to launch large-scale and sustained campaigns against civilians and the military forces for several years (Chuku, et.al, 2017). On the one hand, while, this argument appears reasonable, especially if one considers the demographic distribution and concentration of insurgency in the history of Nigeria. For example, in the early 2000's, when the president and ruling party were mostly from the South-West region, the insurgency was more concentrated in the South-South region, with manifestations in the form of militancy, vandalism, and kidnappings. On the other hand, however, between 2007 and 2015, when the president emerged from the South-South region, militancy dramatically reduced in the South-South region and became concentrated in the Northern regions, in the form of bombings on civilians and military formations, kidnapping of pupils, and killing of so-called "infidels."

The mechanisms underlying the activities of these terrorist groups suggest a strategic tactic. They often try to exploit the government's counter-terrorism dilemma by using violence to provoke governments into harsh and indiscriminate counter-terrorism responses that often affect the entire society, including the innocent population. Two examples are common: (i) when mobile telecommunication services are disabled in the affected regions and different degrees of curfews are imposed; and (ii) when an emergency rule is imposed, which suspends democratic institutions and allows the armed forces to perform so-called cleansing and restoration operations unhindered.

The problem, however, is that these measures are often abused, as there are many cases of human rights abuses and extra-judicial killing by the armed forces in the affected areas (see Amnesty International, 2016). These counter-terrorism actions

are often considered to be provocative to residents and turns them against the government, which eventually leads to the radicalization of some of the citizens, making it easier for terrorist groups to recruit new members by claiming to represent and protect the interest of these vulnerable groups who, according to the recruiting terrorist groups, are being repressed by the state.

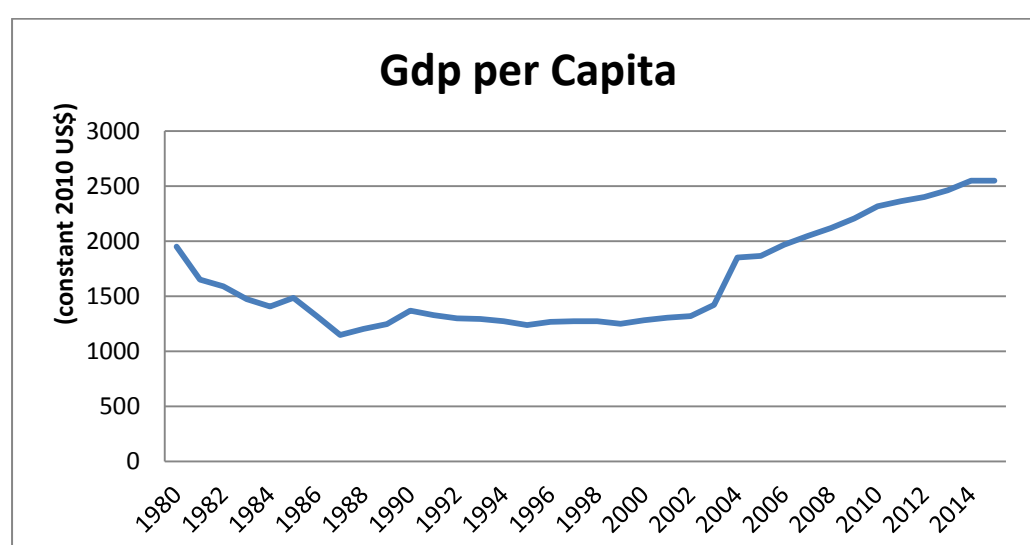
In a bid to use a combination of sanctions and incentives (commonly referred to as the carrot-and-stick approach), the government has been implementing several incentive based programmes. For example, the Amnesty programme, which was designed to pardon repentant militants and rehabilitate them through vocational and professional training programmes and also offer them monthly stipends during the process of integration back into the society. Moreover, additional budget outlays have been granted the armed forces to better equip them to fight terrorism in the country. Because recent investigative evidence has revealed large-scale financial corruption in government efforts toward counter-terrorism in Nigeria and they have had repercussions to the fight against terrorism as the credibility of government effort toward the fight against terrorism is often perceived to be insincere.

2.5 Overview of the Nigerian Economy

As earlier mentioned, Nigeria is the most populous country in Africa, located on the western coast of Africa on a land mass of about 923,768.0 square kilometres with an estimated population of over 180,677,058 million people in 2014. In terms of size of economy, the Nigerian economy is the largest economy in SSA, particularly post a 2014 rebasing of the economy thereby accounting for about 17 percent of the economy size of the region; although, on per capita basis, the country only remains among the top 20 (World Bank, 2015). This can however not be devolved from the share population size of the country.

Before the discovery of oil in the country, the economy was predominantly agrarian with agriculture accounting for about 64.1% and 47.6% of the GDP in 1960 and 1970, respectively (CBN, 2010). After the discovery of oil in the early 1970's, the share of agriculture declined over time with oil taking over, accounting for about 33.6% by 1981. The period between 1990 and 2002 saw the contribution of agriculture to GDP ranging between 37.9% and 42.1%. This figure has hovered around 41.0% since 2003 (CBN, 2010). The 2013 rebasing of the GDP brought a different dimension to the shares of the various sectors in the GDP. With the rebasing, the agriculture and oil sectors which were dominant in their share in the GDP over the years were overtaken by the services sector, whose share in the GDP ranged between 34.0% and 38.0% between 2010 and 2015 (CBN, 2014; 2015). The recent dominance of the services sector reflected the positive developments in the telecommunications, motion pictures and music (Nollywood and entertainment) sub-sectors. Figure 2.8 below presents the trend of Gdp per Capita in the country over the period of study.

Figure 2.8 Gdp per Capita in Nigeria 1980 to 2015

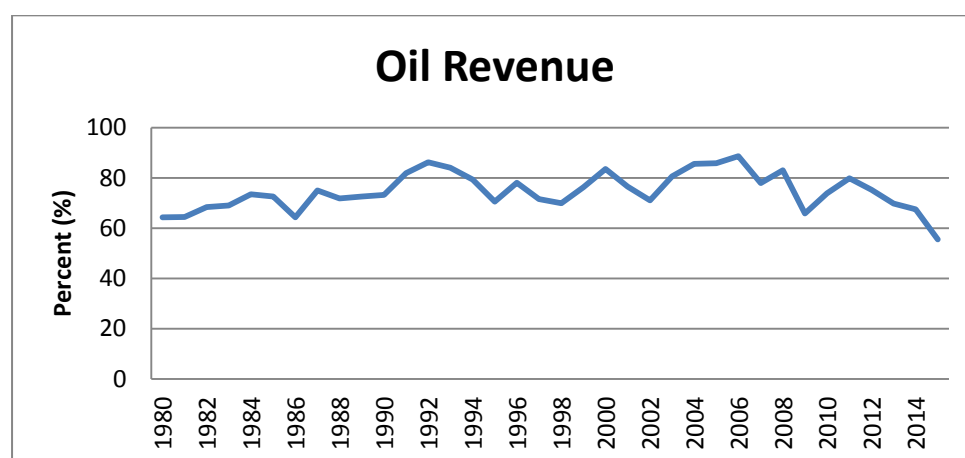


Source: World Bank World Development Indicators (2016)

On average, aggregate income experienced a downward trend for much of the 1980s; however from the latter part of the 80s, it experienced an upward trend and maintained this through the early part of the 90s. A rather undulating trend with upward tendencies followed to the mid-2000s followed a sharp upward trend.

Figure 2.8 captures the situation of economic growth in the country for the period of study. The country experienced a steady decrease in national income ranging between the years of 1980 to 1984. Pinto (1987) claims that this could have been a back drop of the global oil glut experienced in the 70s. Nigeria's growth experienced a sharp rise in 1985 and then further declines through 1987. The economy's growth from 1988 maintained a steady seeming sharp upward trend until 1993. Akpan and Atan (2011) claimed that the initial fall could be explained by the new introduction of the Structural Adjustment programme which they claimed was initially resisted by Nigerians and later on by 1988 started to materialize into economic growth. This was maintained through 1993 which was the period when the Structural Adjustment Programme in Nigeria came to an end. However it witnessed a lot of undulation from 1994 through 2004. From 2005, the economy has however followed a sharp upward trend nature. The year 2004 witnessed the launching of the economic agenda tagged National Economic Empowerment and Development Strategy (NEEDS). The four goals of NEEDS are poverty reduction, wealth creation, employment generation and value re-orientation. The hope of the programme was to diversify the economy, boost non-energy exports, increase industrial capacity utilization, and improve agricultural productivity. A lot of these goals were basically to be funded by oil revenue as it has continued to contribute about half of government revenue.

Figure 2.9 Oil revenue as a percentage of Government Revenue in Nigeria 1980 to 2015 (%)



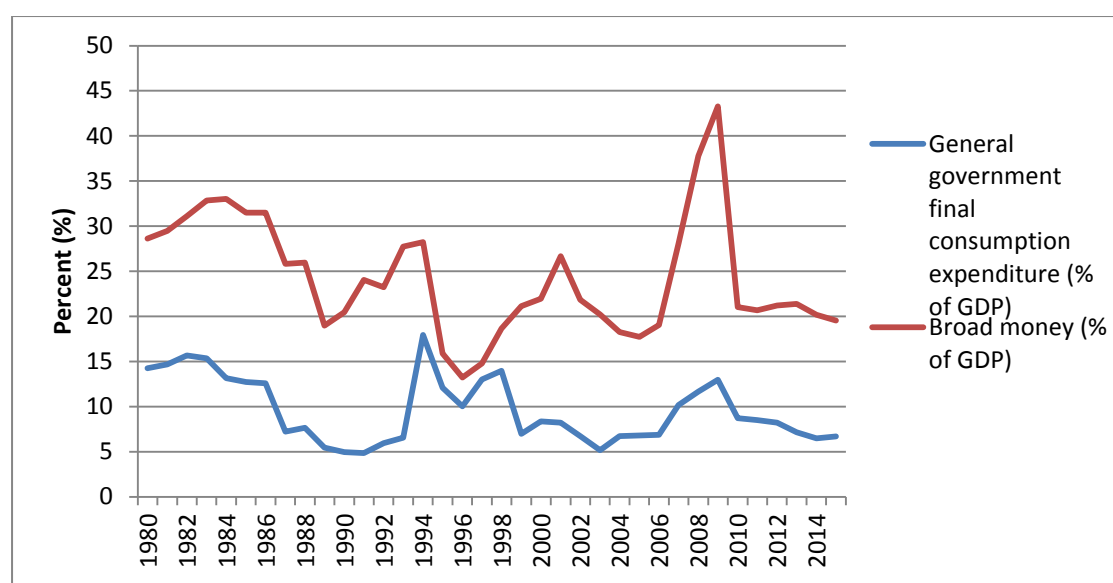
Source: Central Bank of Nigeria Annual statistical report 2015.

According to EIA (2014), Nigeria was the top liquid fuels producer in the Sub-Saharan Africa (SSA) region, followed by Angola. In 2012, Nigeria and Angola jointly produced up to 75.0% of the total liquid fuels in SSA. Still in 2012, Nigeria was ranked the 4th largest Liquefied Natural Gas (LNG) exporter in the world, accounting for 8.0% of total LNG exports worldwide and also exported about 950 billion cubic feet (bcf) of LNG in 2012 (EIA, 2014). The country is endowed with 182 trillion cubic feet of proved natural gas reserves, which accounts for 82.0% of the total proven natural gas reserves in SSA. This makes the country the 9th largest holder of proved natural gas reserves in the world (EIA, 2014).

Fluctuations in crude oil price and other major developments in the global oil market, noticeably affect the Nigerian economy because of her heavy dependence on oil revenue. According to projections by the IMF, Nigeria earned \$52.0 billion in 2015 from oil and natural gas exports. This amount was \$35.0 billion less than what was received in 2014, due to the fall in oil prices (IMF, 2015). As part of lessons learned from developments in the global world market (fluctuations in crude oil price), the

Nigerian government put in place two fiscal buffers (the Excess Crude Account and the Sovereign Wealth Fund) to cushion any form of negative effect from oil price developments. These buffers (accounts) are to hold in trust any excesses (savings) generated from increase in oil price above the budget benchmark price used to estimate budgeted revenues. For example as a result of fall in oil price between 2012 and 2014, government expenditure dropped as presented in figure 2.10.

Figure 2.10 Government Expenditure and Money Supply as percentage of GDP in Nigeria 1980 to 2015 (%)



Source: World Bank Data Bank 2016.

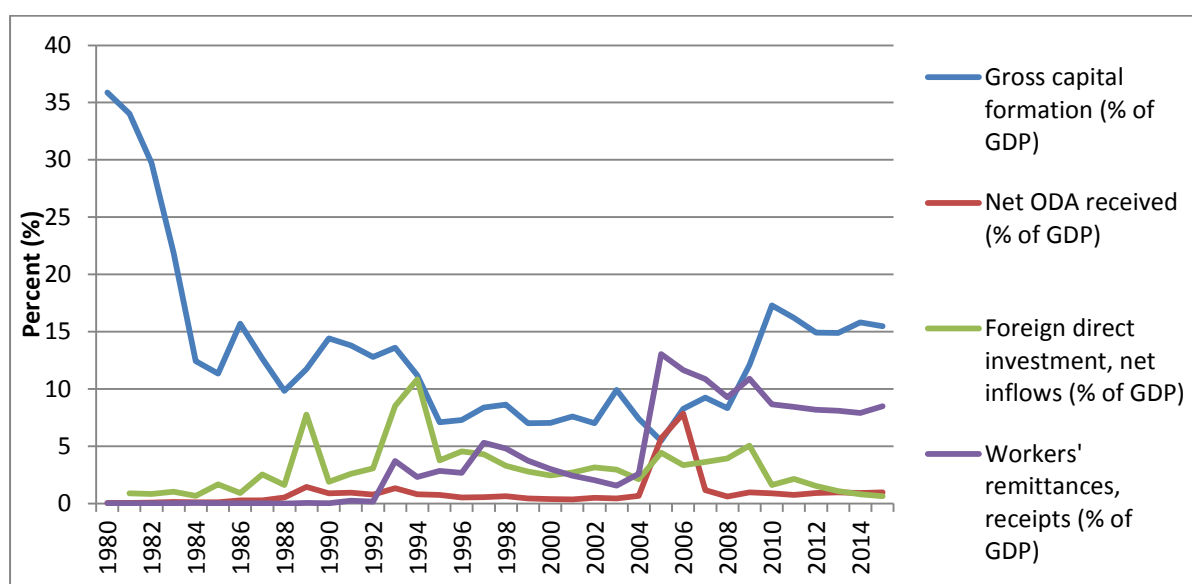
Nigeria has been currently adjudged to be the largest oil producer in Africa, with the second largest proved oil reserves in Africa, next to that of Libya and the world's fourth-largest exporter of LNG in 2015 (WEC, 2013; EIA, 2016). Nigeria has been a member of the Organization of the Petroleum Exporting Countries (OPEC) since 1971. The country's major oil wells are located in the southern part of the country, in the Niger delta to be precise and in the Gulf of Guinea, Bight of Benin, and the Bight of Bonny (offshore). The greater part of Nigeria's crude oil export is mainly to North America and Western Europe, and the bulk of its refined crude oil product

requirements are imported. Most of the country's exploration activities are centred in the deep and ultra-deep offshore and partly in north-eastern part of the country, particularly the Chad basin (WEC, 2013).

2.5.1 Overview of capital in Nigeria

The need for external capital flows to developing countries to supplement domestic savings for investment and growth cannot be over-emphasised. For most countries, the gap between domestic savings and domestic investment is wide; thus to achieve sustainable economic growth, countries require other sources of capital outside the domestic economy. The need for external finance is even greater in developing African countries such as Nigeria, where there are generally high levels of poverty and low domestic capacity to save. The realisation of this need for external capital flows has led many African countries, including Nigeria to liberalise their financial systems. In response to this liberalisation, foreign capital flows to Africa have been on the increase in recent years. History shows that foreign capital has grown significantly in sub-Saharan Africa with Nigeria accounting for a greater portion of this. In Nigeria, FDI increased from US\$544.33 million in 1981 to US\$7.10 billion in 2012 accounting for almost 20% of the total FDI in sub-Saharan Africa in 2012 (World Bank, WDI 2016). Like many sub-Saharan African countries, Nigeria has adopted policies aimed at attracting foreign capital which have allowed for greater capital inflows into the economy. This inflow of capital is ideally expected to promote economic growth. Moreover, the effect of capital flows on economic growth also depends both on the type of foreign capital and the type of economy (Aizenman et al. 2013).

Figure 2.11 Capital flows as percentage of GDP in Nigeria 1980 to 2015 (%)



Source: World Bank Data Bank 2016.

The figure above depicts how capital flows have witnessed a quite significant level of dynamism over the years. In Nigeria, while ODA has maintained a rather steady and low level except for the outliers between 2004 and 2008, FDI and remittances have experienced more volatility. The upsurge witnessed from 2004 to 2006 is linked to debt relief granted Nigeria by the Paris Club of creditors to the tune of over USD 5 billion in 2005 and further increases for 2006 which was classified as ODA (OECD, 2007). Nigeria is a resource-based country and is one of the largest recipients of FDI in sub-Saharan Africa. According to United Nations Conference on Trade and Development (UNCTAD) World Investment Report (2006), Nigeria received 11% of Africa's total inflow of FDI in 2006 and 70% of West Africa's total inflow of FDI in the same year. However, petroleum sector accounted for 80% of the total inflow of FDI, which makes the sector the largest recipient of FDI into Nigeria. It also revealed that Nigeria dominated the increase of FDI inflows into West Africa from \$3.2 billion in 2004 to \$4.5 billion in 2005, a 40% increase which represented 15% of Africa's total FDI value at the time. Nigeria was one of the sub-Saharan African countries that

introduced policy measures to promote investment through tightening its regulatory framework by adding local content requirements (UNCTAD, 2010). Specifically in Nigeria, FDI has been a major target for the past few decades to foster an increase in economic growth. As a result, efforts have been made through different policies to attract FDI. One of the policy measures adopted was the establishment of the Structural Adjustment Programme (SAP) in 1986, which provided the basis for deregulation of the Nigerian economy (CBN, 2001). Nigeria implemented the SAP with a view to restore the economy and make the country better able to service its debt. Prior to the introduction of SAP, Nigeria had an overprotective investment policy (i.e. the Nigeria Indigenisation decree of 1972), which affected growth of foreign capital flows into the economy (Obiechina and Ukeje, 2013).

The abolition of the Nigerian Enterprises Promotion decree of 1989 essentially prevented the economy from maximising its potential when compared to the East Asian countries who were already operating 'open-door' policies in terms of FDI since the 1960s (Adelegan, 2000). Other factors such as a destabilising debt burden as well as socio-economic and political developments mitigated the inflow of FDI in the 1980s. The regulatory and institutional framework required prior to foreign companies being approved and incorporated contributed to a large extent to discourage FDI into Nigeria before 1998 when the Industrial Development Coordinating Committee (IDCC) was set up. FDI reduced in 1994 due to the adverse political climate and macro-economic problems evidenced by rising inflation, and interest and exchange rate volatility in the country at that time. The investment in the global system of mobile communications (GSM) has increased the inflow of FDI into the Nigerian telecommunication industry. According to Central Bank of Nigeria

(CBN), 2001, deregulation of the Nigerian telecommunication sub-sector in 2001 resulted in a remarkable improvement in the sector.

There have been increases in capital flows, especially FDI, into Nigeria since the early 1990s until recently when we observe a reduction in its value. This reduction may be due to the present insecurity in the country with the ongoing bombing attacks and kidnapping by Boko-Haram, a radical Islamist group predominantly operating in the north-eastern part of Nigeria. The presence of such insurgent groups might affect investors' decision to make investments in the form of FDI and remittances in the country. All the capital flows as a percentage of GDP can be seen to be declining, except for gross capital formation since initial drop in the 80s and 90s.

Remittances did, however, start to rise significantly in Nigeria in 2004 from US\$2.27 billion, and stood at US\$20.6 billion as at 2012. The increase is mainly attributable to the Nigerian diaspora being encouraged by the economic growth observed to invest in the country after the change from military to democratic rule. Nevertheless, in recent years remittances, as a percentage of GDP, have also reduced which might be linked to the prevailing insecurity in the country and to some extent the recession in the advanced economies. During this same period, Nigeria witnessed a drastic reduction in receipt of foreign aid, down from US\$11.4 billion in 2006 to US\$1.9 billion in 2012 (World Bank, 2014). The reduction in foreign aid might be explained by the world viewing Nigeria as emerging into a middle-class economy, thus no longer justifying receiving such foreign aid. Although we observe a decline in most foreign capital flows into Nigeria as a percentage of GDP in recent years, we see an increase in their actual values since 2000 as illustrated in figure above.

2.6 Nigeria as a Fragile State

The connotation of fragility as opined by Brock et al (2012) posits that “the terminology of failed, weak states or fragile states is not only descriptive, but also has a normative connotation: states are not functioning as they should”. Thus, fragile state is a state on the brink; it does not have what it takes to effectively perform the function of statehood. It is an ineffective state in a precarious condition, though not yet a failed state. Hence, fragile states are often characterized by ongoing violence and insecurity, a legacy of conflict, weak governance and inability to deliver public goods (McLoughlin, 2012, p.8).

The logical reason is that fragile states fight war on several fronts and because of the flexibility of their socio-political enclaves and the already heated polity and the fact that the state does not have effective control over its territory, the instruments of violence freely comes in and go out at will creating an combustible fuel for violence. Fragile states like Nigeria are always at war but in their own case, they are always at war with themselves. They are held together by force of arm and usually have a very strong centre, the reason is that they cannot afford to have a weak centre or else, the already precarious mansion would fall like a pack of card as typified by Nigeria.

The “Escaping the fragility trap”, report published in April 2018 by the joint LSE and Oxford University Commission on State Fragility identified crucial symptoms of a fragile state, which include insecurity, legitimacy amongst others.

With the spread and impunity of Boko Haram, the marauding Fulani herdsmen and other militant groups, there is no doubt that Nigeria faces multiple threats from organised non-state violence. According to the report “Lack of security lies at the

heart of fragility". It continues: "Fragile states are ill-equipped to respond effectively to security threats. Citizens are therefore exposed to personal risks from violence". Nigerian security forces are not only unable to face down organised private violence in the country, they themselves have become predatory on the people, as frequent reports of human rights abuses by the military have shown (Torbjörnsson and Jonsson, 2017). This is a strong indicator of state fragility.

Although the country currently operates a democratically elected civil rule, however, legitimacy is not just about winning elections, it's also about the social contract (Mueller, 2004). If a government doesn't meet the needs of the people, it would lack legitimacy in their eyes. Nigeria is a country where successive governments have failed to tackle unemployment, poverty, inequality and insecurity, while public officers abuse the state for personal gain. This undermines state legitimacy.

State fragility is also manifested in the failure of the state to deliver basic services to citizens (Batley and Mcloughlin, 2010). Nigeria lacks the ability to get things done, to provide basic things that are taken for granted in many other states! Nigeria probably has one of the worst public sectors in Africa, with poor quality of policy delivery and public investment management. Also, as a mono-economy that depends on oil for 96 per cent of its export and more than 75 per cent of government revenue, Nigeria is certainly prone to shocks, with little resilience an indicator of fragility (Ikpe, 2007).

Finally, Nigeria is socially and politically divided, deeply polarised along ethnic and religious lines, acutely lacking unity and cohesion. While, Nigeria is not a war-torn failed state like Libya, Syria or Afghanistan, and it's not as fragile as some small, vulnerable states, however, Nigeria is not working as an effective state; it has all the recognised characteristics of fragility: lack of basic security, inadequate government

capacity, a hostile environment for private sector growth, a divided society etc. Joseph (2018) stressed that Nigeria is Africa's largest democracy and largest market. The country contributes the most troops for peacekeeping missions in Africa and has become a key broker for peace agreements in West Africa. As a major producer of crude oil and the most populous African country, it has often been 'elected' to represent Africa at major international discussions. The country is multi-ethnic and multi religious with two dominant monotheistic religions Islam and Christianity. Northern Nigeria is dominated by Muslims and southern Nigeria is dominated by Christians. The mixed Muslim/Christian middle belt of the country has been a hotbed for ethno-religious conflict. Clashes over Sharia, tribal differences and land disputes, high restive youth population and oil wealth and its management among other issues continue to fuel the fragility of Nigeria as a nation state. Ikpe, (2007) highlighted that the most fragile countries are also overwhelmingly primary goods producers, particularly mineral resource producers such as Nigeria.

2.7 Conclusion

In conclusion, with a multi ethno-lingual society and a high youth population, there are strong tendencies for social crisis. Unlike most other fragile economies in the region, Nigeria has not recorded any major territorial threat to its existence since the largely self-funded civil war and reconstruction (Heerten, and Moses, 2014). It, however, has a paradoxical weakness which saw the United States of America National Defence committee in 2005 warn about the country's disintegration as a possibility by 2020 (Stewart and Brown, 2009). As the nation continues to generate more revenue based mainly on the sales of oil gotten from the Niger Delta region of the country, agitation for a larger chunk of the revenue continues to gain momentum

leading to the involvement of a mostly unemployed army of youths engaged in vandalism of oil pipelines and other forms of chaotic activities which in turn impede economic activities and discourage investment in the region. In response to such events, the government increases its military presence in the region which often leads to more conflict and as a result security costs for the country increase. Also issues bothering on terrorism and religious extremism coupled with high unemployed youth, that creates an source of recruit for terrorist activities have continued to make the country more fragile.

CHAPTER 3: INDEXING STATE'S FRAGILITY: A CONTEXTUAL APPROACH

This chapter focuses on understanding and conceptualizing the term state fragility. It does this by presenting a conceptual clarification of state fragility, existing indices, their rationale, and the aggregation techniques used. It presents a fragility index for Nigeria using existing methods as suggested by the literature as well as an alternative multivariate approach (principal component analysis). The existing fragility indices are first discussed with potential limitations before proceeding to an alternative approach. The indices are utilised in empirically testing the impact of state fragility on capital flows and economic growth in subsequent chapters.

3.1 Introduction

The term “state fragility” has evolved over the years, and has continued to gain more relevance in development discourse in recent periods. According to Ziaja (2012), most of the states depicted as “fragile” were previously discussed and analysed within the context of “state failure”⁸. Despite the continued debate over the aptness of the term, the concept remains of significant attention to the international community. With varying explanations and no universal definition, common symptoms such as weak internal cohesion and weak governance structures characterise these states. (See Appendix 3.1 for a comprehensive overview of selected definitions of state fragility).

⁸ “Failed states are tense, deeply conflicted, dangerous, and bitterly contested by warring factions. In most failed states, government troops battle armed revolts led by one or more rivals. Official authorities in a failed state sometimes face two or more insurgencies, varieties of civil unrest, differing degrees of communal discontent, and a plethora of dissent directed at the state and at groups within the state. The absolute intensity of violence does not define a failed state. Rather, it is the enduring character of that violence (as in Angola, Burundi, and Sudan), the direction of such violence against the existing government or regime, and the vigorous character of the political or geographical demands for shared power or autonomy that rationalize or justify that violence that identifies the failed state. Failure for a nation-state looms when violence cascades into all-out internal war, when standards of living massively deteriorate, when the infrastructure of ordinary life decays, and when the greed of rulers overwhelms their responsibilities to better their people and their surroundings” (Rotberg, 2002).

Common to the various existing state fragility definitions, a fragile state can be referred to as a low to middle-income economy with limited capacity in carrying out core state responsibilities and failing to provide essential services to citizens for sustainable survival (Chauvet and Collier, 2004; DFID, 2010; OECD, 2012, 2014). In essence, these states pose a serious challenge to global development. In response to this, emerging development literature attempts to provide explanations of the developmental and economic implications of fragility for these states (Carment, Samy and Prest, 2008; Baliaoune-Lutz, 2009; Deléchat, 2018).

Emerging development literature investigates the developmental impact of fragility through either its direct implications for income and growth or its indirect inference for some forms of capital flows to the various states.

On the one hand, studies that have focused on the direct implications of state fragility have failed to reach a robust consensus on its implication for growth. Using a growth regression framework for SSA, Bertocchi and Guerzoni (2012) found that the use of a conventional fragility definition becomes an insignificant covariate after accounting for standard regressors. According to Baliaoune-Lutz (2009), the manner in which fragility influences per capita income is such that it interacts with a series of other factors. Asongu and Kodila-Tedika (2013) concluded that fragile countries respond differently to the economic, institutional and demographic characteristics of state fragility. Most recently, Ferreira (2018) evaluated the implications of state fragility on economic growth. The study suggests that there is a significant negative effect of state ineffectiveness on economic growth, whereas they fail to find any significant impact of political violence.

On the other hand studies such as Mallye and Yogo (2011) have focused more on indirect relationships such as capital flow interaction in the presence of state fragility. While Mallye and Yogo (2011), and Bertocchi and Guerzoni (2012) have focused on SSA, Ferreira (2018) focused on a world sample. It is worthy to note that Ferreira (2018) remains one of the first studies to directly investigate the impact of state fragility on economic growth.

State fragility is one of the most recent concepts to influence the debate about growth in Africa. The condition of fragility has been associated with combinations of multiple dysfunctions, including a country's inability to provide vital services, unstable and weak governance, lack of territorial control, and a high propensity to conflict, rather than to specific economic, institutional, or historical characteristics (Bertocchi and Guerzoni, 2012). While it may be difficult to singularly isolate the influence of each of these factors, the use of a composite measure may facilitate understanding of the effects of state fragility on other phenomena such as economic growth. For example, Sekhar (2010) tried to analyse the role of social, political and economic factors in a fragile state using the failed state index of 2007. The results support the hypothesis that there is a great degree of simultaneity in the vulnerability in these three domains and together they determine a country's fragility/stability. It is seen that social vulnerability impacts political and economic vulnerability significantly, whereas political vulnerability has a definite effect on social vulnerability but not on economic vulnerability. Economic vulnerability had a limited effect on the vulnerability in the other two spheres – in the sense that a single dimension alone (either income level or income inequality but not both) appears to impact vulnerability in the social and political domains. The insignificant effect of political vulnerability on economic vulnerability is surprising. One plausible explanation is that political

vulnerability may lead to economic vulnerability with a lag, while this study is based on data at a single point in time.

Africa has played a central role in the analysis of fragility, since it is in this continent that fragility is particularly widespread. The European Report on Development (2009) is entirely devoted to the problem of fragility in Africa. The potential negative impact of fragility and the consequent relevance of fragility for policy are also confirmed by the increasing attention of other international organizations.

An approach to the analysis of fragility, pioneered by international organizations such as the World Bank and the OECD, linked it to the level of development in affected countries (Ziaja, 2012). Within this policy-oriented debate, standard measures of economic success, such as income and growth, were evaluated together with indicators of the quality of government intervention in the realms of fiscal and monetary policy. The perception that economic progress and sound policies can guarantee a nation's strength has been contested (Collier and O'Connell, 2007; Carment, et.al, 2009 and European Report on Development, 2009).

It has been acknowledged that, especially in SSA, the beneficial influence of economic factors is by no means mechanical, since relatively rich African countries are often plagued by corruption and activities that have generated instability and dysfunctions, and thus lead to fragility (Bertocchi and Guerzoni, 2012). For example, the availability of natural resources can play a counterproductive role, since it can lead to the well-known resource curse⁹, especially when associated with a high level of societal inequality and/or demographic pressure (Ross, 2003). In such situations, even commitment to economic reform can bring about turbulence and instability.

⁹ Maier, R., (2010: p.11) Growth and Equity in Fragile States. Conflict Research Unit, Netherlands Institute for International Relations-Clingendael

Thus, the lesson to be learnt from the approach that has stressed economic explanations of fragility is that the beneficial effect of positive economic outcomes is not necessarily warranted, which calls for careful analysis of the channels at work, such as capital flows.

In the light of these issues, this thesis adopts a working definition of state fragility, built on a conceptual framework from the Fund for Peace (2015) and Bertocchi and Guerzoni (2012) that establishes fragility as a multidimensional phenomenon of a state's lack of cohesion and instability which manifests along social, economic and political dimensions particularly in developing countries.

Analysis bringing fragility into context for fragile state economies requires a meticulously customised and pragmatic approach and not the generalistic approach that has been engaged by the international community. Kaplan (2014) posits that focus should rather be on underlying institutional and sociopolitical dynamics, effects and structures, as they give greater insights into the actual state of fragility in a country and have resultant economic implications. He opined further that the international community should cease from its one size fits all assumption on fragility issues, arguing that fragile states experience myriad difficulties, which can not be all be addressed concurrently.

This chapter, therefore, aims to contribute to the emerging discussion on the analysis of fragility, and its applicable quantification. The chapter proceeds as follows: Section 2 provides a general background on fragile states, definitions, characteristics and classifications. Section 3 provides an overview of existing indices their objective, measurement technique and critique. Section 4 discusses country-specific issues thereby providing a broad contextual understanding of Nigeria's

fragility dimensions and indicators. Section 5 identifies relevant variables and defines them. Section 6 presents the results of existing fragility measures and the proposed alternative approach. Section 7 provides a summary of the chapter.

3.2 Background and Conceptual Framework of Fragility

3.2.1 Background

“Fragile states” are made up of an interestingly diverse group of nations, which are vulnerable to internal tensions and are often associated with weak economic performance. Fragility is often associated with poverty, with an increasing fraction of the world’s poor living in the fragile states (OECD, 2013). This makes them more dependent on external interventions than non-fragile developing countries and more vulnerable to capital flow fluctuations. Furthermore, many fragile states are conflict-affected or conflict-vulnerable, positioning them as potential risks to regional and global stability.

Interestingly, quite a lot of the existing models on fragility, an emerging area of academic and research interest, tend to ignore middle-income countries’ fragility and its manifestations. However, some of the largest and long-standing subnational occurrences of armed conflict and large-scale violence and other manifestations of fragility have been exhibited by hitherto perceived relatively stable middle income countries with fast-growing economies or economies with substantial growth potential (World Bank, 2015). For instance, the World Bank (2015) included African countries such as Kenya, Republic of Guinea, and Nigeria that often slip through this net.

According to Ikpe (2007), the literature on fragile states has overwhelmingly focussed on low-income states. However, in isolating initial conditions and the development and security outcomes, a truer picture as to the extent of state fragility emerges. The majority of fragile states are indeed low-income, but some, including Nigeria, are becoming middle-income states. The majority of these very fragile middle-income countries are in Africa, and the rest are in the Middle East.

Kaplan (2015) went further to explain what he termed as “fragile but controlled contexts”, citing the cases of pre-2011 Syria, Saudi Arabia and Uzbekistan. Perhaps growth gives an erroneous external perception of the stability of economies. This led to calls by organisations such as the OECD for the exclusion of income levels as inputs in fragility measurements and classifications. They argued that capital inflow and growth may not necessarily determine state fragility. Perhaps, the reverse is the case, where capital inflows and growth can be hindered by fragility. An example is the commonly cited one of Nigeria. According to Omeje (2005), state fragility dimensions such as armed conflict and oil pipeline vandalism in the Niger Delta region reduces capital flows and government revenue and as such may hinder the economic growth of the country

Furthermore, cross-country fragility models often fail to distinguish between “pockets of fragility” in a country and a fragile state (Kaplan, 2015). For example, it is possible to have manifestations of some dimensions of state fragility in a country at a particular point in time, but that does not necessarily mean it is a fragile state. State fragility is, therefore, the exhibition of manifestations of characteristics of a fragile state in any of its various dimensions at any point in time while fragile states are those that continue to exhibit dimensions of fragility over a protracted period of time.

The build-up to a fragile state and its effect are transnational (Ikpe, 2007). Such fragility may create spillover effects to neighbouring countries, as seen in the case of Nigeria and her neighbours in the fight against insurgencies. It can, therefore, be argued that perhaps almost all countries exhibit some manifestations of fragility at particular points in time, but that does not qualify all nations to be called a fragile state.

While definitions of fragility and country circumstances differ, fragile states tend to have a combination of weak and non-inclusive institutions, poor governance, low capacity, and constraints in pursuing a collective national interest. According to Kaplan (2015), fragile states are often characterised by governmental inability to deliver essential services to secure the population and they face severe and entrenched obstacles to economic and human development. As a result, these countries typically display an elevated risk of both political instability (including civil conflict), and economic instability (through a low level of public service provision, inadequate economic management, and difficulties in absorbing or responding to shocks).

In contrast, resilience can be defined as a condition where institutional strength, capacity, and social cohesion are sufficiently strong for the state to promote security and development and to respond effectively to shocks (Kaplan, 2015). Given the multiple sources of fragility and the reinforcing interactions among them, fragile countries find it very difficult to build resilience, and many seem to be caught in what can be termed a “fragility trap”. This fragility trap refers to a closely interlinked circle of underdevelopment, political instability or conflict and weak social cohesion. This makes the transition out of fragility neither simple nor rapid: for instance, it is

estimated that, of the 26 sub-Saharan African countries identified as fragile, only 12 could be expected to become more resilient by 2039 (Cilliers and Sisk, 2013). The transition process seems to involve some intermediate phases ranging from state failure and conflict to less extreme symptoms of weak governance and institutions, with each phase entailing different challenges.

In the early 1990s, much of sub-Saharan Africa could be regarded as “fragile” (Milliken and Krause, 2002). Periods since then have witnessed substantial changes in some countries: societies and leaders have moved towards an agenda based on peace and development; the end of the Cold War has put an end to surrogate conflicts, producing a global “peace dividend”; the world economy and the demand for natural resources have grown strongly; the international community has written off most of the debt of the heavily indebted poor countries through multilateral debt relief initiatives; and various initiatives have sought to enhance and redirect aid to respond better to recipient country needs and to build domestic capacity. More specifically, seven SSA countries: Cameroon, Ethiopia, Mozambique, Niger, Nigeria, Rwanda, and Uganda have made relative progress in building resilience (Cilliers and Sisk 2013). These countries have benefited from factors such as natural resource windfall, more inclusive political arrangements, strengthening of institutions, and investment incentives. They have also been able to maintain macroeconomic stability and increase domestic revenues to support higher levels of public investment and improved social services. However, several other countries have not been able to make similar transitions and some have even regressed (e.g., Côte d’Ivoire, Malawi, Zimbabwe).

Most of the fragile economies were low-income economies about a decade ago, but recent development has seen about half of them classified as middle-income level economies (OECD, 2013, p.19)¹⁰. Almost half of the fragile states (21 out of 47) have upgraded from low-income country to middle-income country status. This has implications for the upgraded states and can be interpreted to mean progress and less dependence on aid, with aid accounting for about 3% of their GDPs (ibid). However, the use of income (GDP) as a determinant of status has been criticised as not having any direct relationship with the actual living standard of the citizens of a country (Kahneman et al., 2004). The Economist (11 February 2006, p. 70) described GDP as “badly flawed as a guide to a nation’s economic well-being”. More so, if the said growth is a function of natural resource endowment in a country as in the case of most of the upgraded countries.

Growth resulting from natural resource endowment exploration has been criticised to be non-inclusive. Such activities do not employ much of the population and hence do not affect the lives of most citizens very much, sometimes even leaving them worse off as natural resource exploration can have negative impacts on the environment in the absence of strong government to ensure best practices and safety guidelines for the environment (Sachs and Warner 2001). This explains the importance of strong governance in the management of such natural resources (Kolstad and Soreide, 2009). Furthermore, it also reveals that natural resource-driven growth in such fragile states only widens the inequality gap, hence, the poor who need to be assisted still exist in these societies, but they may lack access to aid because of the nominal nature of the measure of national development status.

¹⁰ See appendix 3.2 for income level classification of fragile state

The presence of natural resource in most stable economies with efficient institutions is a blessing as it means more income in addition to other fiscal sources of income (Collier, 2007). The case in most fragile states may not be the same. In many countries, the discovery of resources has led to reduced attention to other sources of income, as seen in the case of Nigeria (Sala-i-Martin and Subramanian, 2008).

Collier and Venables (2009) argued that there are three main reasons why resource abundance can make a state more fragile. The first is that it increases the opportunity to take resources away from the incumbent government, which is termed looting; there are increased incentives for corruption, theft and insurgency, all of which undermine governance and can lead to state fragility. The second is that resource abundance can change the characteristics and behaviour of the incumbent government, primarily by reducing its accountability. Resource revenue may reduce citizens' scrutiny of their government, and also allow government to buy its way out of "trouble". The third reason is that resources may contribute to a more difficult economic environment; resource rich economies are subject to extreme volatility and may face particular difficulties in creating new jobs, both factors that pose threats to stable government. However they noted that, while these are negative effects of resource abundance for fragility, it is important to recall that there is also positive potential. A resource rich state has the funds to build state capacity, to educate the population and to develop the infrastructure for economic development.

3.2.2 Conceptual Framework

The categories of 'failed' and 'fragile' states did not emerge simultaneously, nor did they follow the same trajectories. According to Nay (2013) The concept of a 'failed state' was introduced by foreign policy analysts in the early 1990s, in the context of

the post-Cold War, when scholars sought to describe the alarming proliferation of civil conflicts that engendered, in some countries, the fragmentation of state institutions, economic recession and deterioration of security conditions. The outbreak of wars in Bosnia and Croatia, factional conflicts in Somalia, poverty and social anomie in Haiti, the failure of the Cambodian government to put an end to the guerrilla activity of the Khmer Rouge, and, more generally, the development of 'new wars' beyond the model of conventional warfare induced a growing number of policy analysts to forge new categories – such as 'quasi-state' (Jackson, 1990), 'failed state' (Helman and Ratner, 1992/1993) or 'collapsed state' (Zartman, 1995). Subsequently, the concepts of 'failing' and 'failed states' have been widely disseminated by US administrations and policy analysts after 11 September 2001 especially in the field of international security.

The notion of a 'fragile state' has had a slightly different trajectory. It has spread internationally among donors, technical agencies and some governments, especially in the areas of development, humanitarian assistance and peace-building. In particular, it has been widely used by the Organisation for Economic Co-operation and Development (OECD) and the World Bank since the mid-2000s to designate the poorest and most unstable countries that cannot meet minimum standards set by major donors of development aid. Many other notions are also used: states are described as weak, vulnerable, unstable, insecure, in crisis, collapsed, fragmented, suspended, broken, shadow, and as quasi- and warlord states. The list could go on. Each concept refers to a specific situation. Nevertheless, the concept of the 'fragile state' is an overarching concept used by many scholars and analysts to depict countries where the legitimacy, authority and capacity of state institutions are dramatically declining, weak or broken. 'Fragile state' is a generic and

comprehensive category adopted by a large number of Western governments and international organizations since 2005, while 'failed' and 'failing states' remain more controversial notions.

As it stands, there are about forty-seven economies that are still classified as fragile (OECD, 2013). This reveals the importance of the issue of state fragility for global growth and development in this age of globalisation. Initially, the fragile states' agenda focussed mainly on conflict and post-conflict countries, however, recent discussions have explained that fragility is a broader concept (Maier, 2010). The OECD revealed the necessity to broaden and deepen the fragility concept from a focus on "a state's capacity or willingness to provide services" to a multi-dimensional understanding that takes into account social, economic and political situations in a country (OECD, 2013, p.15).

The OECD pledged to move from a 'thin' technocratic view of governance performance to a 'thicker' concept, which takes into account the quality of "state-society relations" (OECD, 2013, p. 15 and 35). Such a concept also pays "greater attention to potential stress factors", which can be internal or external: e.g. economic crises, demographic pressures and development issues such as human capital enhancement (ibid, p.15).

From the shift to a broader and deeper understanding of fragility follows the need for a new quality of international engagement with fragile countries, which takes into account their peculiarities (Collier 2007). A "New Deal" for engagement in fragile states was endorsed in 2011 by fragile states, donor countries and organisations as an important framework to answer this need (Nussbaum, 2012).

The five 'peace building and state building goals', which the 'New Deal' identifies for fragile states, are legitimate politics, security, justice, economic foundations and revenues and services. The International Dialogue on Peacebuilding and State building (IDPS) reflects the above mentioned broadened and deepened understanding of fragility in its new terms of engagement in fragile states (IDPS, 2013). It also provides measures that could put fragile countries in the 'driver's seats' of their individual development processes. According to the Brookings institution policy paper on "implementing the new deal for fragile states" (Hughes et.al 2014), a major recommendation for any effective fragility assessment and development policy in fragile states, has to be locally owned rather than solely produced by external technical experts. Before this the commitments of the 2005 'Paris Declaration' were rarely fulfilled in fragile states because they were based on "assumptions about state capacity and legitimacy that simply did not exist in these states" (International Peace Institute (IPI), 2012, p. 2).

Analysis bringing fragility into context on fragile state economies requires a meticulously customised and pragmatic approach rather than the generalistic approach that has been proposed by the international community (Kaplan, 2014). In essence, each fragile state is unique and requires a self-tailored approach that considers its history, economic potential, weaknesses and composition. This therefore makes theorising with regard to fragile states challenging. The Fund for Peace, remains a torchbearer in research on fragile state economies in attempting to conceptualise fragility identifying the major dimensions of state fragility (Fund for Peace, 2015). Table 3.1 below presents an explanation of fragility dimensions. Their explanation of fragility dimensions is consistent with that of the OECD (2016).

Table 3.1: Fragility Dimensions

Dimensions	Description
Social	The risk vulnerability is affecting societal cohesion emanating from horizontal differences, social cleavages, differences among culturally defined or other forms of group construction.
Political and Military	The risk vulnerability as a result of inherency in political processes, governance legitimacy, security and protection of life and properties.
Economic	The risk vulnerability is emanating as a result of weakness in the foundations of the economy and economic activities.

Source: Fund for Peace (2015: p.17) Fragile State Index 2015

3.3 Fragility Indices: An Overview

Indices on fragility are extensively considered as a welcome contribution to the data sets of the social sciences (Marshall 2008, p. 2, and Ferreira, 2017). Conducting a time series analysis of the nature of the bigger theme of this study often requires data sets covering a reasonable time spread. Unfortunately, most existing fragility indices have a relatively short temporal coverage, with a range from five to fifteen years.

According to Maier (2010), a related challenge is the classification and measurement of fragility. In reality there appears to be a broad spectrum of heterogeneous country experiences.¹¹ The term fragile states may hide the diversity of country experiences ranging from countries in a situation of early recovery to countries with chronic levels

¹¹ Taking into account the heterogeneity of fragile states and situations, the European Report on Development (2009) presents some common socio-economic features of fragile states in sub-Saharan Africa: an inability to mobilise domestic capital and dependence on external sources; reliance on primary products; concentrated exports; low human development; and poor infrastructure. Bertocchi and Guerzoni (2012), in explaining what determines state fragility in sub-Saharan Africa also included variables such as inflation, youth bulge, ethnic fractionalisation, religion and conflicts. The fund for peace (2015) presented a similar narrative but included a political and military dimension that included weak democratic structure and high cost of security among others.

of underdevelopment or protracted conflict (Christoplos and Hilhorst, 2009). From the development perspective of fragility, for example, studies have suggested the plausibility of a relationship between fragility and MDG levels (Harttgen and Klasen, 2009). Maier (2010) however cautioned that the heterogeneity of MDG performance among fragile states is so vast that it is not very useful to treat fragile states as a group. He argued that taking into account the difficulties in defining and measuring fragility as well as the considerable differences between agencies in listing countries as fragile, a certain degree of political reasoning may matter in the decision to label a state as fragile.

Extant knowledge on current fragility indices remains fragmentary and mainly refers to topically conceptual issues. Sanín (2011) provides one of the most relevant statistical critiques on fragility indices, paying attention to the ranking and aggregation technique of some fragility indices. One of the most researched indices, perhaps due to its relatively older status, is Worldwide Governance Indicators (WGI), the WGI Political Stability and Absence of Violence index (Kaufmann et al. 2009). Most of the other existing studies have been more involved with taking of stock of useful potential indicators (USAID 2006). Nyheim (2009) opined that they had focused rather more on “early warning approaches”, which are primarily of a qualitative form and not readily available or useful for quantitative research, but can be helpful in the understanding of other findings. With regard to quantitative fragility indices, it is opined that there is still not yet a systematic analysis of their statistical properties or the procedures used in their measurement (Ziaja, 2012).

Another widely used definition of fragility is based on the Country Policy and Institutional Assessment (CPIA) that has been conducted by the World Bank since

1999. The ratings are intended to capture the quality of a country's policies and institutional arrangements, with a focus on the key elements that are within the country's control, rather than on outcomes (such as growth rates) that are also influenced by elements outside the country's control. Since the CPIA ratings represent criteria for aid allocation, they play a significant role for donor bodies. On the basis of the CPIA, the World Bank defines as fragile those low-income countries scoring 3.2 and below (over a 1–6 range). From 1999 to 2005, the individual ratings have been kept confidential. However, the general rankings of countries have been made public. On the basis of the rankings, it is therefore possible to infer the distribution of the countries by quintile. On the basis of the resulting quintile distribution, the OECD defines as fragile those countries in the bottom two quintiles as well as those that are not rated. There is a partial overlap between the CPIA-based definitions of fragility and other related indexes such as the Failed State Index (published by the Fund for Peace), the Index of State Weakness (published by the Brookings Institution), the Indicator of Failed & Fragile States (published by the Country Indicators for Foreign Policy project), and the Fragility States Index (published by Polity IV). While all these indicators record similar components, the choice of variables and their weighting schemes remain largely arbitrary (Bertocchi, 2011).

3.3.1 Objectives of Existing Indices

The constituting attributes of an ideal fragility index and what should be its organisational format remain germane questions limiting the fragility discussion within the quantitative framework. A lot of the existing models focus on some

assumed drivers for all countries in the same manner¹². However, considering the dynamic, non-universal, peculiar characteristics and manifestations of fragility across countries, there are no corresponding impacts for different drivers and indicators across the board, and they can only be best accounted for based on context (Ziaja, 2012 and Kaplan, 2015).

Another major limitation of fragility measurements is that most existing fragility indices have been skewed in such a manner to suit the purpose of the hosting organisation. For example, a major state fragility index like the CFP defines fragility to be “the extent to which the actual institutions, functions, and processes of a state, fail to comply with the strong image of a sovereign state” (Carment, Prest and Samy 2009, p. 84). However, questions regarding what should be the ideal functions to be satisfied by a “sovereign state” continue to trail this index. One frequently referred to function in the literature is “monopoly of the use of force”. Some other indices have also mentioned “public services” (Fund for Peace, 2009), “legitimate, transparent and accountable political institutions” and “fostering economic growth” (Rice and Patrick, 2008, p. 3).

Most of the seemingly holistic and all-encompassing indices have been driven by international development policy motives, with their focal objectives centred around the identification of countries whose stance exhibits development hindrances and difficult to consolidate peace (Sanín, 2011). Indeed, these various indices seek to include a wide range of deficiencies which characterise fragile states and societies. However, they tend to cater to peace and perhaps governance issues and dynamics in these countries with little regard to other dimensions which have been widely

¹² See Appendix 3.3 and 3.4 for a comprehensive overview of measures and method used in the construction of existing fragility indices as adopted from Ferreira (2018) and Ziaja (2012) respectively.

accepted as crucial in identifying the fragility of a country (Carement, Prest and Samy, 2009). While this may be a welcome idea in answering questions that concern identifying which countries of the world require the most urgent attention of the international community, other crucial dimensions such as economic and social are often missed out.

While it remains possible for these variables and factors to covary, in reality they do not necessarily always follow a given algorithm. For example, comparing fragility in two similar states may reveal a situation whereby a relatively small but violent conflict afflicts one, and the other is affected by an economic crisis that is on a large scale. Classification of this situation would, therefore, require a conscientious and meticulous framework to assess their relative performances. This, in essence, provides the basis upon which most fragility indices have been criticised, suggesting the need for an individual country fragility index that captures each country's peculiar fragility. Each fragile country is unique in its fragility, and a one size fits all approach in determining country's fragility only scratches the surface of the discussion.

In quite a lot of cases, fragility index authors are knowledgeable of their instrumental limitations as attested to by some of them and have instead referred to their index as only suitable for identification of early warning signs, and perhaps not for economic analysis. The BTI Weak Stateness Index puts forward perhaps, one of the most modest fragility definitions and index. The indices are limited to the features “functioning administration structures” and “monopoly on the use of force” (Bertelsmann Stiftung 2008, p.6). However, apart from achieving their organisational purpose, it remains a welcome idea in academics and indeed the fragility literature, in the sense that given levels of parsimony remain pivotal in achieving quantitatively

differentiating concepts to investigate state fragility causes and ultimately the consequences.

The multiple definitions of state fragility and inability to achieve a general and holistic definition of state fragility make it rather impossible to employ most of the emerging indices in quantitative studies. Most of the emerging definitions are products of peace studies and political science studies. They tend to cover issues mainly bordering on peace within a country, leaving out other indicators such as economic and social. Hence, they are often inappropriate for econometric analysis (Gutiérrez Sanín 2009, p. 5). For example, the model-based structure of the WGI Political Stability Index and the PCIL Risk Ratio do not spell out their fragility features in a conceptual manner. In feeding their models, they barely utilised indicators focused on political stability.

The PCIL Risk Ratio authors employed same indicators employed by the “global model for forecasting political instability” of the Political Instability Task Force (Goldstone et al., 2010). The model is designed on perhaps one of the most exhaustive data generating studies in the political science fields and attempts to predict different types of political violence as well as civil wars. Other indices, such as the State Fragility Index and the Political Instability Index have referred to the Political Instability Task Force as a springboard for their indices (EIU 2009; Marshall and Goldstone 2007: 3).

In contrast to the Political Instability Task Force, these indices are focused on measuring fragility and social unrest respectively, which differ entirely from the political violence and civil war objectives of the Political Instability Task Force. Other indices such as the State Fragility Index only provides an operational definition and

no descriptive definition that states its scope and subject of interest. The IDA Resource Allocation Index focuses largely on institutions and policies, subjecting the index to an increased level of sensitivity to impromptu and sharp changes in comparison to structural indices (Ziaja, 2012).

3.3.2 Aggregation Techniques of Existing Indices

A major area of concern in the fragility index literature remains the aggregation techniques to be utilised. While most existing indices make use of similar techniques founded upon simple addition of "equally weighed or uniform attributes", rules of additive aggregation reveal that negative variance in the value of one variable will be compensated for by positive variance in another variable (Munck, 2009). However, the validity of this judgement may largely be a function of the dimensions stipulated in the index. A case can, however, be made for such an aggregation technique by arguing that the selected variables and indicators reflect the same unidimensional concept, or by arguing that although the variables do not covary, they are parts of one phenomenon and are "combined to form a whole" (Munck and Verkuilen, 2002). While the argument may be visible in a unidimensional phenomenon, in the case of a multidimensional phenomenon like that of fragility, perhaps the compensation argument becomes too simplistic, problematic and may defeat the purpose of aggregation. For example, how do high inflation or religious variance and low education and indeed human capital compensate for one another? The justification for this becomes even more difficult in the absence of a unified measurement unit (Gutierrez Sanin, 2009).

For example, the CIFP index is made up of six dimensions of equal weight and aggregated by the use of arithmetic summation. It is, therefore, possible for a country

to perform woefully in one dimension but be cushioned by the remaining five dimensions. While, it is improbable empirically, it does reveal the pitfalls of this technique in the face of dimensions that cannot be easily compensated for. Similar to most fragility indices, in defending their approach, the Index of State Weakness authors argued the non-availability of a standard formula for the appropriation of weights to the different dimensions of fragility. Hence their choice of equal weight (Rice and Patrick, 2008, P.26).

A major challenge with most of the existing indices is their simplification of the complicated reality existing in the fragile states, in an attempt to aggregate and rate the levels of fragility existing in these countries. Recent studies such as Fabra Mata and Ziaja (2009) and Gutiérrez Sanín (2011) have argued that the challenge is not with the measurement; instead, the challenge is the “construct” that seeks to create a rating scale for a multidimensional phenomena that affect various countries in varying ways and degrees based on internal dynamics. Grävingholt, Ziaja, and Kreibaum (2012) argued that this manner of bias in aggregation results in the kind of proximity at the tail end of the failed state index of 2010 that exists between two completely diverse countries and at different economic and development stages - Haiti and North Korea. In the case of Haiti, the nation is struggling with basic needs of survival for its people. In North Korea, a repressive regime with the capacity to use nuclear weapons potentially to threaten the rest of the world. They argued that, this kind of challenges renders these indices of somewhat limited use in a critical operational task such as policy making that suits the economic conditions in each of these countries.

Appropriate quantification technique in building fragility index, remains a largely debated issue (Ziaja, 2012). Marshall and Cole (2014) suggested that, with the emerging nature of the discussion on state fragility and its quantification, fragility indices would contribute immensely to the understanding of the state fragility concept. Extant knowledge on the quality of current fragility indices remains fragmentary and mainly relates to topically conceptual issues only. Most of the existing indices have been driven by international development policy motives, with focal objectives centred around the identification of countries whose stances exhibit development hindrances and make it difficult to consolidate peace. Nyheim (2009) opined that existing indices have focused mainly on the same “early warning approaches”, which are primarily of a qualitative form for all countries, and not readily available or useful for quantitative research, but instead can be helpful in the understanding of other findings.

Ziaja (2012) critiqued the wide use of an equal weight average in aggregating the various indicators of fragility. However, considering the dynamic, non-universal, peculiar characteristics and manifestations of fragility across countries, the impacts for different drivers and indicators are not the same across the board, and they can be best accounted for based on each state's context. Studies such as Grafe (2015) have made a case for the use of this technique, especially where data is “lousy”, as in most fragile states. However, the use of an equal weight technique in the quantification of a multidimensional phenomenon such as fragility is prone to misquantification or misrepresentation. Grävingholt, Ziaja and Kreibaum, (2012) elaborated the multidimensionality of fragility using it to expound the bias in the 2010 failed state index. According to Ferreira (2017), one prominent aspect of some of the current approaches is their focus on different dimensions of state fragility. However,

considering the rankings of countries based on fragility indices, they do not take into account the multidimensional character of the concept when operationalising it (particularly when it comes to the choice of aggregation procedure).

Recent views in the academic world warn that, by using additive indices to rank countries according to a single aggregate measure, these proposals overlook the heterogeneity among fragile states (Gravingholt et al., 2015 and Ferreira 2017). Ferreira (2018) presented an alternative multidimensional approach using principal components analysis (PCA) in quantifying state fragility, for selected fragile states following the line of recent work taking multidimensionality into account (e.g. Gravingholt et al. 2015).

In the light of these debates, this study seeks to contribute to the knowledge on state fragility and its quantification by providing a contextual quantification of fragility. This was done by adopting the widely used approach by existing fragility indices and then going further to use the alternative multivariate technique as proposed by Ferreira (2018).

3.4 Country Specific Issues and Nigeria's Fragility Dimensions and Indicators

Before analysing fragility indices, their context has to be defined. It is widely debated in the literature on what precisely fragility problems are. However, there appears to be a consensus on the varying scope and nature of fragility which revolves around specific functions, gaps and dimensions. Authors over the years following the views on the fragility concept such as Milken and Krause (2002), Schneckener (2004) and Call (2011) amongst others have all expressed some form of agreement on the variation in the dimensionality of state fragility ranging from two, three and more dimensions.

Contemporary economic analysis is yet to fully or adequately and efficiently understand the various forms of mutual interactions and feedback systems of state fragility and the economy. More attention to state fragility over the years has appeared to be coming from the peace and humanitarian fields of study. It is, however, impossible to deny that fragility defines both the social and economic atmosphere within a country.

According to the Fund for Peace (2015), dimensions of state fragility can be broadly grouped into social, economic, political and military indicators. Unfortunately, such categorisation can be interwoven as in the case of Nigeria. In as much as the categorisation of dimensions of state fragility has been established, country-specific issues vary and the way they play out vary. This explains the lack of a universally harmonised definition of state fragility. In most cases, the relationships between the dimensions are not exclusive, but instead, the interplay across countries varies.

This study identifies relevant variables to explain state fragility, following the multidimensional approach in defining and grouping fragility and its indicators based on the commonalities of various definitions and symptoms of fragility and dimensional categorisation of the manifestations of fragility proposed by the Fund for Peace (2015). These variables were identified in line with Bertocchi and Guerzoni, (2012)¹³ and adapted to suit the context of Nigeria. This study has identified the quantifiable variables most relevant to Nigeria's fragility under three broad categorisations in line with previous country studies that have tried to conceptualise state fragility within the Nigerian context (Ikpe 2007 and Tonwe and Eke, 2013). Income levels have been excluded from the indicators as suggested by the OECD,

¹³ Bertocchi, G. and Guerzoni, (2012) presents a framework that investigates what explains state fragility along social economic and institutional dimensions in sub-Saharan Africa.

as they often obscure more germane issues relating to the internal dynamics of a country and its people. The selected variables focused on quantifiable symptoms and manifestations with the most economic relevance and not necessarily causes, symptoms and consequences as proposed by Besley and Pearson (2011).

3.5 Variable Definitions

The sample includes variables reflecting the determinants of fragility as expressed by Bertocchi and Guerzoni, (2012), adjusted to fit the Nigerian context and categorised within the dimensions of state fragility as posited by the Fund for Peace (2015).

$$F = (OR, INF, SE, YB, S, TR, G, E, R) \quad (3.1)$$

Where: *F* = Fragility, *OR* = Oil revenue, *INF* = Inflation, *SE* = School Enrollment, *YB* = Youth Bulge, *S* = Security, *TR* = Terrorism Incidence, *G* = Governance, *E* = Ethnicity, *R* = Religion

Table 3.2: Variable Definition and Description

Variable	Description
Oil revenue (E)	Oil revenue measured as a percentage of total revenue of Nigeria measured on an annual basis. Source: Central Bank of Nigeria Annual statistical report 2015.
Inflation (E)	Inflation is captured using the Consumer price index reflecting the annual percentage change in cost levels of a basket of goods and services. Source: Central Bank of Nigeria Annual statistical report 2015.
School Enrollment (E)	Human capital is captured by proxying with total secondary school enrollment expressed as a percentage of the official national secondary school-age population. It also serves as proxy for institutional quality. In the absence of better information about the initial institutional quality, studies such as Jalilian, et.al, (2007) have used educational attainment as a proxy variable. They explained that, while at first reading this may seem an unusual choice,

	<p>secondary school enrolment is often correlated with regulatory governance. They cited other studies that have done this such as Benhabib and Spiegel (1994) that argued that the initial level of human capital can affect the growth path of productivity. Olson et al (1998) also use secondary school enrolment as a proxy explanatory variable in their growth study.</p> <p>Source: World Bank Data Bank 2016.</p>
Security (P&M)	<p>The Security variable is captured by the summation of defence and internal security expenditure made by the government as a percentage of annual government expenditure over the years. Source: Central Bank of Nigeria Annual Statistical Report 2015.</p>
Terrorism Incidence (P&M)	<p>Terrorism incidence is captured by using data from the Global Terrorism Database. The GTD defines terrorist attack "as the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation". Source: National Consortium for the Study of Terrorism and Responses to Terrorism (START) (2015). Global Terrorism Database [Data file]. Retrieved from http://www.start.umd.edu/gtd</p>
Governance (P&M)	<p>Governance in this study is divided strictly between Military and civil rules. Where governance(democracy=0 military=1) Source: National Bureau of Statistics 2015.</p>
Youth Bulge (S)	<p>As explained by Gunnar Heinsohn (2003), continued growth in youth population often leads to social unrest especially where the unemployment level is high, hence the impetus to compete by religion or political ideology. In capturing this youth percentage of the total population was used using the World Bank youth age criteria. Source: World Bank Data Bank 2016.</p>
Ethnicity (S)	<p>The number of major ethno-lingual groups in Nigeria Source: National Bureau of Statistics 2015.</p>
Religion (S)	<p>The number of major religious groups in Nigeria Source: National Bureau of Statistics 2015.</p>

Where E = Economic Indicator, P&M = Political and Military Indicator and S = Social Indicator in line with the Fund for Peace (2015) classification.

3.6 Indexing Nigeria's Fragility

In indexing Nigeria's fragility, existing and an alternative approach will be utilised by this study. Firstly the existing ("traditional" equal weight arithmetic aggregation technique) which is the most common approach will be utilised. Subsequently, principal component analysis approach will be utilised.

3.6.1 The Equal Weight Arithmetic Aggregation Technique

This technique is perhaps the simplest and most widely used form of aggregation technique used in generating fragility indices. This study adopts it using existing fragility indices such as the CPIA, FSI and CFP. The regular steps followed in the development of linear models for prediction of a proxy variable for a phenomenon are identifying the most relevant dimensions associated with the phenomenon, followed by the estimation of best-fit weights based on the presumed contribution of each dimension to the phenomenon. This approach is widely used with datasets of few but reliable and large dimensions. Following from fragility, literature apportioning of weight to fragility dimensions can be quite challenging. Furthermore as fragility, and its characteristics varies from country to country, equal weights were used. Assigning of equal weights is an alternative technique to multivariate analysis in a multidimensional phenomenon. Equal weights pre-specification to all dimensions ignores dependencies between and among the various dimensions. This, therefore, makes the method a less flexible way of understanding underlying trends in the data on the various dimensions. Hence the predictive ability is rather low. According to Armstrong et al., (2015), the golden rule in dealing with equal weight models is to "be conservative".

The acknowledgement of environmental uncertainties such as causal relationship ambiguity and poor data quality has been argued to provide the "theoretical

rationale” for the application of equal weights in indexing (Graefe, 2015). According to Dana (2008), the intentional introduction of this bias (equal-weight) explains the difficulty of prediction in such situations. In equal weight models, data are not allowed to determine the weight of variables, rather, the weights are based on prior intuition and the directional effects of the various dimensions determined (Graefe, 2015). The various dimensions are brought to the same unit. The values are then aggregated in calculating the index.

This can be mathematically stated in a generic form as :

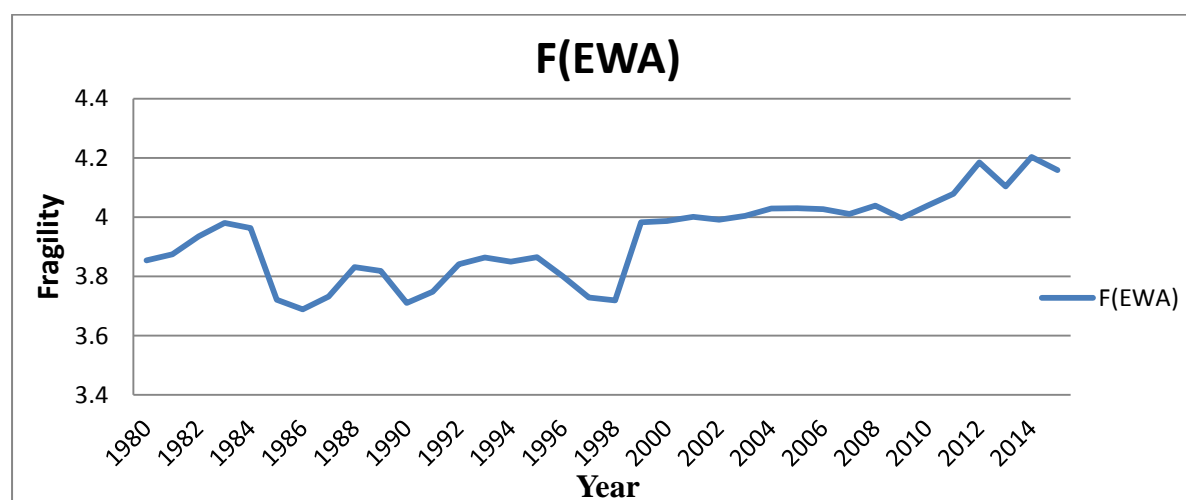
$$y_t = d + w \sum_{i=1}^k x_i + v \quad (3.2)$$

where: d is the estimated constant, w is the estimated coefficient of the predictor variable, and v is the error term.

As shown in the equation as adapted from Graefe (2015), the scheme for variable weighting in the equal weight model is exogenously determined. Going further, ethnicity (E) and religion (R) were constants over the period of study.

Based on the diverse form of nature of the data used, all variables were used in percentages to ease aggregation except governance¹⁴.

Figure 3.1: Equal Weight Aggregated Fragility (F(EWA))



¹⁴ Governance was measured from 0 – 1. Where (Democracy=0 military=1)

3.6.2 A Multivariate Approach (Principal Component Analysis)

Principal component analysis is a statistical analysis technique used for a multivariate dataset. It is mainly used to reduce the dimensions of observation and to simplify data analysis and interpretation (Armeanu and Lache, 2008). It is often used but not limited to economics and social research, as it is used in other fields of study including engineering. It performs best when faced with correlated variables. The crux of principal component analysis is the transformation of an initial data set with its dimension to another set with a lower dimension while still optimising the amount of information captured from the original set.

In mathematical terms, it is mostly a procedure for identifying a new dataset to which the initial datasets can be forecasted. The amount of principal components is, therefore, the same as the number of variables theoretically, but the whole essence of the analysis is to deduce as little amount as possible and still not jeopardise the original sets variability.

As earlier stated principal component analysis is hinged on the transformation that connects different dimensions of vectors. It is worth stating that principal component analysis views data from a vector perspective, i.e., with magnitude and direction as against scalar quantities that are viewed from just a magnitude dimension alone. Going further, “principal components are standardised linear combinations of initial variables and are uncorrelated” (Armeanu and Lache, 2008). Previous economic studies using principal component analysis have found their basis in the works of Hibbs (1973) Vainers and Gupta, (1986) and Gupta (1990) who used it in quantifying political instability. The mainstreaming of this method, however, came after Alesina and Perotti (1996). Other studies such as Gyimah-Brempong and Traynor (1999)

Asteriou and Price (2001) and Ponzio (2005) amongst others remain prominent studies that have utilised principal component analysis.

This study therefore adopts the framework from previous studies such as Dunteman (1984) and Gyimah-Brempong and Traynor (1999). Dunteman (1984) presented the principal component generic framework as:

$$c_i = \sum_{j=1}^n \alpha_j^{(i)} x_j, i = 1, \dots, n \quad (3.3)$$

Where c_i is the principal components i , $\alpha^{(i)}$ is a vector with the element that defines SLC¹⁵ i and x_j the initial variable¹⁶.

Exploratory analysis

A preliminary statistical test was conducted on the data set to provide a general overview of the characteristics of the dataset. The result is presented in Appendix 3.5. A sample adequacy analysis was conducted using Kaisers measure of sample adequacy. The measure ranges from 0 to 1. A measure from 0 to 0.49 suggests that the data set is not suitable for principal component analysis. 0.5 up to 1.0 reflects adequacy. A higher figure across the range, usually the closer to 1.0, the more suitable the data set is. The result suggests adequacy with most independent variables ranging from 0.7 to 0.9 and an aggregate of 0.8 as presented in Appendix 3.6. Furthermore, an initial correlation analysis was carried out on the data, which revealed significant levels of correlation between the variables. Due to this high correlation as presented in table 3.3 below for example (terrorism and youth bulge), among others, there is a likelihood of the problem of redundancy of information.

¹⁵ SLC (Standardized linear combination)

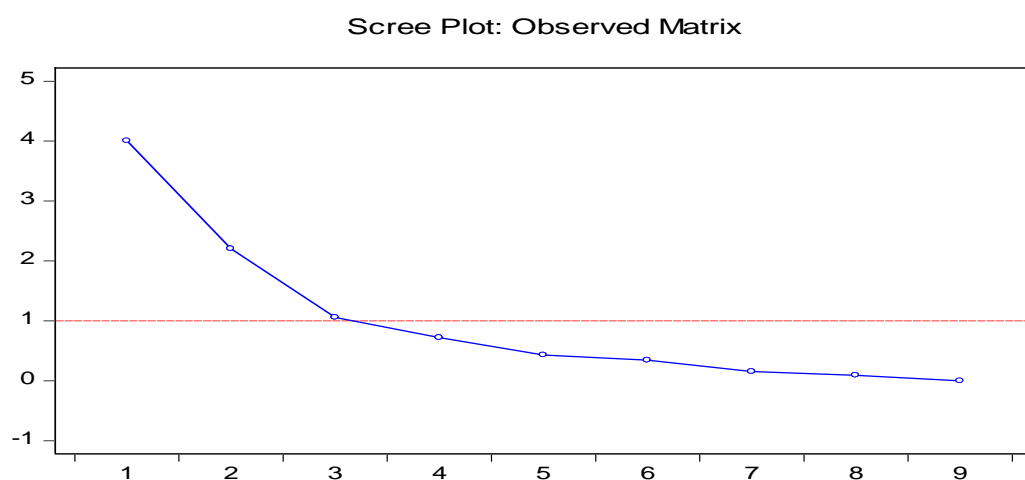
¹⁶ See appendix 3 for equation 3.4 to 3.10 for further breakdown as adopted from Dunteman (1984)

Table 3.3: Correlation matrix

	OR	R	YB	INF	TR	G	E	SE	S
OR	1.000								
R	0.253	1.000							
YB	0.094	0.090	1.000						
INF	0.182	-0.084	-0.341	1.000					
TR	-0.058	0.172	0.766	-0.409	1.000				
G	-0.030	-0.142	0.702	-0.415	0.611	1.000			
E	0.252	1.000	0.090	-0.084	0.172	-0.141	1.000		
SE	-0.073	0.349	0.624	-0.320	0.855	0.512	0.350	1.000	
S	-0.241	0.066	0.732	-0.501	0.720	0.554	0.066	0.549	1.000

A core basis for the use of principal component analysis is to eliminate this redundancy as well as dimensionality.

It is, however, worthy to note that eigenvalues greater than one alone are those that are of interest. According to the Kaiser-Guttman criterion, extraction should be on the basis that only the principal components that have a variance greater than the initial standardised variables should be extracted. The eigenvalue plot below reveals that the other six eigenvalues are negligible.

Figure 3.2: Scree Plot

In the above scree plot, three eigenvalues are greater than one. Hence three principal components have been retained in the analysis accounting for 80.71

percent of the variability in the initial space. From the preceding, it can be inferred that this analysis has transformed a nine-dimensional space into a three-dimensional space losing 19.29 percent of the variability in the initial space. It is also worth noting that the first principal component on its own accounted for about 44.50 percent of the variability in the initial space, meaning it can be used to a large extent to determine fragility in Nigeria.

Table 3.4: Principal Component (Eigen Value)

Number	Value	Difference	Proportion	Cumulative Value	Cumulative Proportion
1	4.005	1.802	0.445	4.005	0.445
2	2.203	1.147	0.245	6.207	0.690
3	1.056	0.336	0.117	7.264	0.807
4	0.720	0.292	0.080	7.984	0.887
5	0.428	0.083	0.048	8.412	0.935
6	0.345	0.192	0.038	8.757	0.973
7	0.153	0.063	0.017	8.910	0.990
8	0.090	0.090	0.010	9.000	1.000
9	-0.000	---	-0.000	9.000	1.000

Beside reducing the dimensionality as well as redundant information elimination, principal component analysis stresses the control of common, latent factors on initial variables. Simar (2003) argued the potency of ensuring that most of the important and crucial information in a multivariate variable is summarizable in a limited number of latent factors. For the factor analysis, individual initial variable behaviour is often a function of three different factor types: (common, individual and residual). The individual and residual factors affect individual variables in individual ways and thereby generate a particular influence type.

Furthermore, communalities for individual initial variables can be determined as the sum of squares of the factor loadings. Uniqueness can be determined as one minus communality. The principal component analysis does construct new characteristics that can summarise the initial data set, by finding and aggregating the most

prevalent characteristics that summarise the data set. The results are as presented in Appendix 3.8.

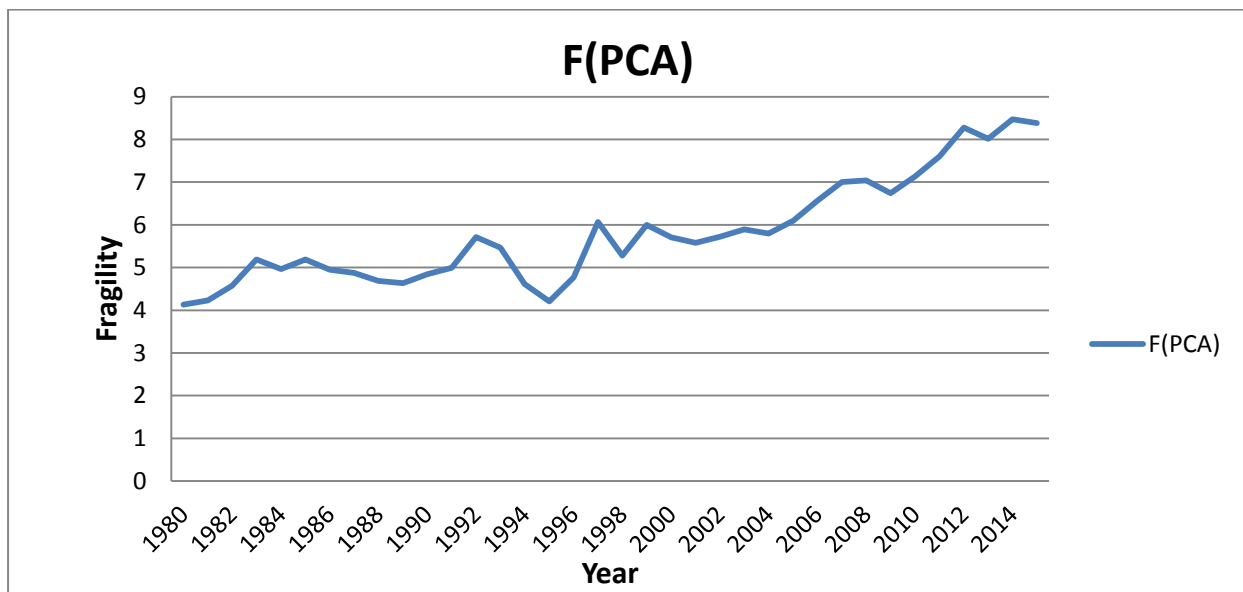
A typical situation in this method is such that numerous variables moderately load on each component and can sometimes be moderated by rotating the components of the initial PCA. This helps to obtain simple structures where the coefficients in a component assume their closest possible values to one or Zero (Jolliffe, 2002). Based on this, the result for the PCA was rotated using the orthogonal Varimax method as used by (Larru, 2009). This technique generates new coordinate axes perpendicular to one another. It maximises the Varimax criteria¹⁷. The results are as presented in Appendix 3.9.

Earlier studies using principal component analysis for constructing economic time series indices have often made use of the first principal component in computing their index. The analysis of Asteriou and Price (2001), however, varied from others, in which they used all the principal components in computing their indices as stipulated by the scope of the study. In the light of this, this study utilised the first principal component in line with the convention from most previous studies such as Alesina and Perotti (1996); Annet (2000) and Ponzio (2005) but not with Asteriou and Price (2001).

Based on the preceding, the fragility index for Nigeria using PCA is presented as below:

¹⁷ Varimax criteria=maximizing the sum of the variances of the square loadings within each column (Duntelman, 1989).

Figure 3.3: Principal Component Analysis Fragility (F(PCA))



The principal component analysis does construct new characteristics that can summarise the initial data set, by finding and aggregating the most common characteristics that summarise the data set.

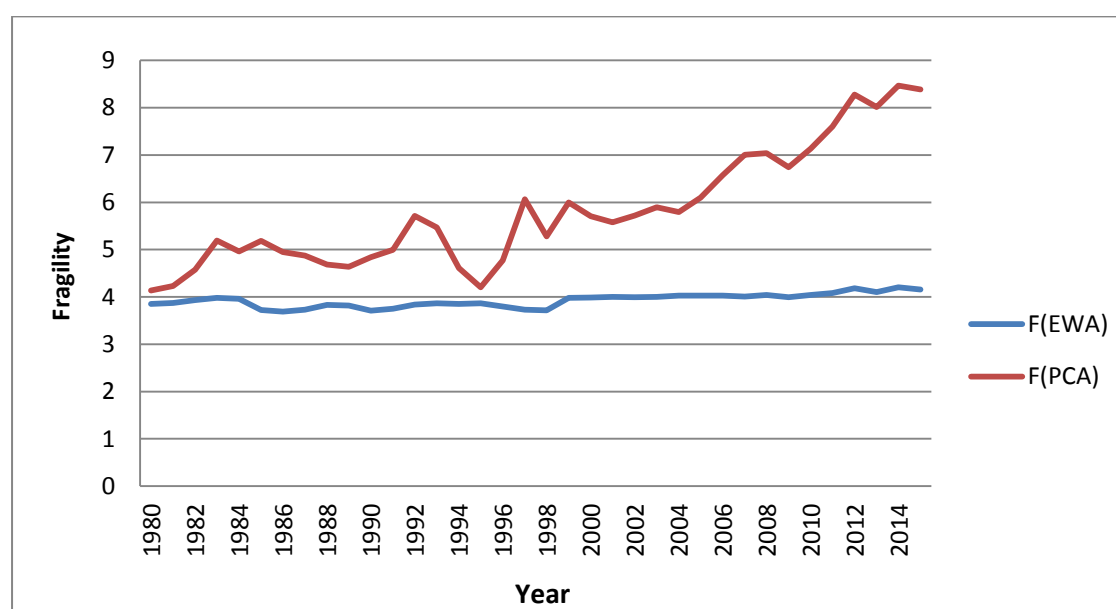
Components are arranged in a manner of their explanatory power such that the first component (C_1) explains the most variation amount of the initial data, under the assumption that the squared weights sum equals to one. Eigenvalue sum equals the number of variable in the original data set, and the variability accounted for by each component (C) = λ_i/n . Principal component (C_2) is uncorrelated with (C_1), and explains more variations but not as much as (C_1), under the same assumption. Similarly, other components are uncorrelated with other components and account for an additional amount of variation but less than its previous component. A major limitation, however, for principal component analysis is the unit choice of series. This is so as the analysis will not identify factors that have not significantly contributed to variability (Fifield et al., 2002). This was however tried to be remedied by log-transforming the series, except the one for governance where the data were in 1s

and 0s. Also, dimensions of state fragility were aggregated using this technique and presented in Appendix 3.10.

3.6.3 Implications of a Multivariate Approach to Fragility Measurement

Despite the many challenges of effectively quantifying state fragility, fragility indices remain a valuable tool for the analysis. As highlighted in Ziaja and Fabra Mata (2010: 1), this can be a useful tool for development policy. As argued by Carment, Prest and Samy (2008: 3), fragility is a matter of degree and “while some countries are in fact failing or failed, in general, aspects of fragility can be identified in virtually all states”. As suggested by Nay (2013) an empirical analysis such as this therefore helps in filling the gap in providing in-depth case studies that could help provide empirical evidence on the effect of state fragility for economic growth and development.

Figure 3.4: Plot of (F(PCA)) and (F(EWA))Fragility Indices



From the trends of the results generated, as evidenced in Figure 3.4 above, it becomes clear that state fragility trends in Nigeria have continued to be on the rise, however not in a straight linear path. The upward trend in state fragility corroborates

studies that have suggested the difficulty for most fragile states to build any form of resilience, such as (Cilliers and Sisk 2013). In the light of the results generated from both techniques used in this study to quantify state fragility, the relevance and implications of a multivariate approach can be discussed. Firstly there have been in recent times continued calls for scholastic efforts that approach fragility from a multidimensional perspective (OECD, 2015). The multivariate approach used in this study positions it among the emerging studies that attempt to provide a multidimensional analysis of fragility albeit from a contextual (country specific) perspective. This, therefore, makes this index apposite as a fragility proxy for further studies.

The multivariate measure utilises a principal component analysis approach to develop a measure of state fragility that serves as an alternative to the arbitrary weighting scheme. This method, therefore, creates a variable that maximises the correlation between itself and the individual components of the various dimensions of state fragility¹⁸. In calculating the index, the variables were normalised to ensure that the resulting principal component indicates a deviation of state fragility from its mean, and in effect produces standardised scores. This was done in line with the seminal work of Gyimah-Brempong and Traynor, (1999), where they used the principal component analysis to calculate a measure of political instability. They argued that the use of this approach ensures the use of a statistically determined variable which, although not based on economic and political science theories, is free from the potentially arbitrary hands of the researcher in its development.

¹⁸ Principal components create a composite variable which accommodates the highest possible correlations with the individual components of state fragility dimensions. This is accomplished by choosing the vector of weights, which maximise their variance (Dunteman, 1984).

Secondly, going by the commonalities of the various definitions of fragility, that perceive it as a multidimensional phenomenon, the use of a univariate approach to quantification becomes inadequate. The word "multidimensional" suggests the need for a vector¹⁹ or multivariate approach in quantifying fragility and renders the use of a scalar²⁰ or univariate approach inappropriate.

Thirdly by using a multivariate approach, unsubstantiated assumptions of the equal weight approach that allow for dimensional compensations are easily controlled for. This approach, therefore, avoids the unscientific apportioning of weights to fragility dimensions. The weights generated can be used in the generation of datasets apt for time series econometric analysis. In an attempt to have a deeper and clearer understanding of the implications of state fragility, the state fragility index was disaggregated to three constituent dimensions of state fragility namely economic, social and military and political.

3.7 Summary

This chapter aimed to conceptualise fragility in the context of Nigeria within the premise of existing literature. In doing this, it examined seminal works on fragility. It identified the various forms of the dimension of fragility and ongoing arguments on the fragility concept. It went further to highlight the consensus on the multidimensional approach adopted in dealing with fragility and found out that fragility is contextual. Going further a brief contextual background on Nigeria was carried out, providing the context for this study with an economic focus, thereby situating the study into context. A brief review of indexing fragility was carried out, and major methodological concerns were raised. The study went further in

¹⁹ Vector quantity is quantity that has both magnitude and dimensions.

²⁰ Scalar quantity is quantity that has magnitude with no dimensions

presenting a time series fragility index for Nigeria using methods suggested by existing literature as well as introducing a multivariate approach in the principal component analysis.

CHAPTER 4: ECONOMIC GROWTH AND CAPITAL FLOWS: A THEORETICAL AND EMPIRICAL REVIEW

This chapter seeks to provide a review of theoretical development in the growth literature and to survey the empirical findings on economic growth, capital inflows and state fragility.

4.1 Introduction

An understanding of theories of economic growth provides a springboard for how developing countries and developed countries have progressed over time. More explicitly, theories of growth have aimed to provide first order growth conditions that are crucial for all economies regardless of what stage they are. Perhaps, they may be more apposite for developing economies as they provide insight into the essential areas that require more attention to drive the much needed economic growth in these economies. However growth models have continued to be augmented to suit specific scenarios over the years, but they still tend to have some principal considerations that have remained relevant to perhaps all growth models.

There have been quite extensive study surveys discussing the continuous and most recent contributions to the growth discussion. They include Alesina et al. (1996); Aghion and Howitt (1998); Easterly, (1998); Hoeffler, (2002); Dollar and Kraay (2003); Barro and Sala-i-Martin (2004); and Aghion and Howitt (2009). The focal objective of this review is to understand the core properties of theories of economic growth, and their development as well as the empirical evidence about these growth theories across the developing world.

The continuous development and progression of theories of economic growth from the classical notions to the current frontier of knowledge of economic growth theories

have created rather robust competing frameworks jointly referred to as modern growth theories (exogenous and endogenous). The exogenous growth proponents posit output growth to be exogenously determined by technological advancement and that government policy has little or no permanent long-run growth effect. Endogenous growth proponents posit that output growth is endogenously determined, and government policy has a permanent long-run growth impact. Theoretical build up to what is now often classified as modern theories of growth are founded upon the frameworks of the Classical, Schumpeterian and Harrod-Domar schools of thoughts.

4.2 Theoretical Schools of Thought of Economic Growth

Economic growth remains a germane concern to economists from developed and developing countries alike. This has led to a situation where divergent opinions and models have been generated based on the various existing schools of thought, as well as continued progression in the knowledge frontier based on empirical findings and new knowledge; however, they do have some core founding properties in similarity. This section seeks to trace the continued theoretical progress that the schools of thought on economic growth have witnessed from the classical schools to modern growth theories.

4.2.1 Classical School of Thought

The concerns of classical economists were widely expressed in the seminal *inquiry into the nature and causes of the Wealth of Nations* of (Adam Smith, 1776). According to Kan and Omay (2006), various notions of classical growth theory have played fundamental roles in informing modern growth theories. Concepts, which include fundamental dynamic equilibrium approaches in perfect competition environment; the effect of population growth on capital per capita; technological

advancements as the basis for specialisation and evolution of new production techniques, as well as the concept of accumulation of capital (human and physical) form the basis of modern growth discussions. The classical proponents include Adam Smith, David Ricardo and Rev. Thomas Malthus among others.

Adam Smith posited two distinct economic growth sources, one in association with the increase in specialisation and the other related to the level of specialisation. His quite optimistic growth model involves isolated leaps with a gradually increasing rate of technological process (Thirlwall, 2002). Spontaneous leaps in output per capita are regarded as functions of improvements in specialisation which are driven by institutional and changes in mobility. Advancements in research and innovation are seen as a result of specialisation levels which in essence drive output per capita. This advancement in specialisation leads to resultant advancements in technology and subsequently leads to further specialisation. Greiner et al. (2005), in discussing the classical school of thought, opined that, while growth and development necessitated an increase in market size, it, led to more division of labour which subsequently led to increasing externalities and returns. The arguments for an increase in externalities and returns laid basic foundations for what is often referred to now as models of endogenous growth.

Other proponents of the post-Smith classical school of thought expressed some form of caution as to the economic growth and development processes. For example, Thomas Malthus expressed some fears as to what he termed as population and food supply imbalances. He opined that the differences in the growth rates of population and food supply, with the former growing at a faster rate than the latter, would only lead to a situation where living standards will keep fluctuating within a subsistence frame. Malthus (1798) posited perhaps one of the simplest production and

population relationships. He argued that production growth fosters population growth and that population growth fosters production growth in return with geometric growth and productivity. However, Malthus expressed concerns about the realism of this relationship in a finite resource world, arguing that an unchecked population grows geometrically while production only grows arithmetically.

David Ricardo stressed the crucial role of investment in per capita income growth through the technological process, which he referred to as machinery. However, he argued that diminishing returns is a function of resource scarcity, and explained the possibility of stagnation in the absence of capital accumulation. He opined that technological advancements could raise the productivity of labour and profit only for a brief period (t). However, he argued that the increase in rents due to capital accumulation can force profit rates down to zero (Thirwall, 2002, p.8-9).

Karl Marx in advancing this perspective stressed the significance of investment in the technological process as well as the accumulation of capital in ensuring per capita income growth. Marx posited that the drop in the profit rate is a result of capitalist competition. Supply can exceed demand as a result of overproduction leading to unconsumed production, as well as social disturbance. He argued that accumulation of capital stimulates production leading to wage increase, however reducing profit margins. However he noted that any wage reduction effort would exacerbate societal problems. These contributions of Marx to the growth discussion remain pivotal as he did not just provide a rigorous formulation for growth, but he did this from a more comprehensive scope of economic and welfare effect, thereby contributing to the steady-state growth concepts. John Stuart Mill on the other hand, however, stressed the role of science and education as growth drivers.

Classical notions of increasing returns and division of labour of Adam Smith were revisited by other scholars such as Young (1928) Ramsey (1928) and Schumpeter (1942). Ramsey focused more on simultaneously increasing returns in association with optimisation behaviour of the household (utility function). Young in his seminal work “Increasing returns and economic progress” reemphasised the association between industrial output and increasing returns; his model involved the interplay of activities in macroeconomic industrial expansion. A revisit of these notions by Myrdal (1957) and Kaldor (1957) gave birth to non-equilibrium models.

The classical growth school of thought’s construction remains inadequately harmonised and not entirely utilisable by the market. Irrespective of the divergent perspectives and contributions in the formulations of the classical school of thought they had common grounds such as the crucial role of private agents in a market economy and the need for public and social infrastructure provision to facilitate their activity (Greiner et al., 2005). This school of thought has provided fundamental works that have metamorphosed into the modern and new growth theories.

4.2.2 The Harrod-Domar School of Thought

The Independent works of Harrod (1939; 1948) and Domar (1946; 1957) generated a fresh breath to the growth discussion. In doing their independent works, they utilised inferences from the “The general theory of interest, employment, and money” the seminal work of Keynes (1936). They sought to extend the static equilibrium proposition of Keynes. In doing this, they advanced on the fixed-coefficient technology assumptions as well as constant returns to scale assumptions within the framework of the production function. Their models posit that labour and capital are utilised in a constant ratio without substitution between the factors. Both emphasised the relationship of the critical areas of efficiency and savings for capital

accumulation. This model provides a near accurate short-term growth prediction hence its extensive patronage in developing economies, for growth strategy formulation. This is so as it simply focuses on the determination of required investment levels needed to achieve a targeted growth rate in the immediate short term. However, labour and capital disequilibrium raise long-run concerns for this model, often referred to as “Knife edge dilemma”. If the rate of savings is endogenously determined and capital intensity as against labour intensity is encouraged within an economy, this will boost capital’s marginal productivity, revealing a balanced growth path for the economy. However, if the reverse is the case, it can be argued that such an economy has low levels of capital productivity in line with the original Harrod-Domar model, as it does not provide adequate consideration of productivity, technological progress, and money.

The Harrod-Domar model remains one of the most fundamental models in the explanation of economic growth. It begins with the basic economic concepts of consumption and savings as components of income in developing a growth framework. It can be depicted mathematically by utilising the basic notions of income, consumptions and savings and capital accumulation in generating equations to form a growth framework.

$$Y_t = C_t + S_t \quad (4.1)$$

Where Y= income, C= consumption, S=savings and t = time-specific effects.

Indeed if the capacity of savings to drive the required investment levels to achieve the desired growth in an economy is inadequate, and if the model is to be a complete predictor of growth, economic growth in such an economy becomes problematic. Shortages of this form have often been used as a basis for the inadequate growth of

some developing economies hence, foreign capital inflows. These foreign capital inflows, therefore, provide a substitute for the much-needed capital to drive growth in these countries. These inflows can come in the form of Official Development Assistance (ODA), Foreign Direct Investment (FDI) and foreign remittances. Easterly (1997) argues that relationship between investment and growth is not necessarily long term, but short term particularly in the case of foreign investment to developing countries. This, therefore, explains the wide acceptance of this model for growth analysis in the developing economies through the short-term growth potential of foreign capital inflows which augment the constrained level of domestic capital formation and investment.

As explained earlier, the “knife edge dilemma”, the impact of advancements in technology, money, and productivity are all considered to be crucial for long-run growth but are left out of the Harrod-Domar model (Nedomlelova, 2007). However Zuleta (2007) argued for long-run balanced growth for the economy on the basis of the ability to endogenise the rate of savings and capital-intensive technologies in driving high marginal productivity of capital. The construct of the Harrod-Domar equilibrium stimulated crucial debates in the growth discussion from the 1950s until the 1980s.

This debate has been between the schools of exogenous growth with significant proponents such as Robert Solow, Paul Samuelson and Franco Modigliani and the Keynesian school with substantial proponents such as Nicholas Kaldor, John Robinson, Richard Kahn and Luigi Pasinetti. While the critical focus of the exogenous school of thought is on the capital-output ratio in achieving economic equilibrium, the Keynesian school of thought argues from a ratio of savings perspective in attaining economic equilibrium. However, according to this school of

thought, long-run growth may not be a function of investment as labour and productivity are determined exogenously in the exogenous model. Capital output ratio increase would compensate for savings and investment and have no disturbance effect on growth in the long run. The rudiments of exogenous growth assume a diminishing return to capital and variable factor proportions of labour and capital (Thirwall, 2002). The capital accumulation equation can, therefore, be expressed as in equations 4.2 to 4.14 (see appendix 4).

Kaldor (1961) however stressed that steady growth of income per capita remains a fundamental concept observable across countries over time. Greiner et al. (2005) noted that Kaldor remains a leading proponent of the notion of steady income per capita growth. Growth theorists such as Uzawa, (1965), Romer (1986) Lucas (1988) and Barro (1990) have represented this steady income per capita growth view of Kaldor. Classical notions that reflect inter-temporal behaviour and the economic agent's dynamic optimisation have been revisited in more recent times. Summarily, although the Harrod-Domar school of thought has been subjected to quite a lot of criticism, the model was quite successful in its time and has often been revisited in modern times, especially in dealing with developing economies. Their perspective provides a springboard for subsequent growth proponents in establishing the equilibrium mechanism. Notions such as the knife-edge in-equilibrium dilemma have led to the advancement of modern theories of growth (exogenous and endogenous).

4.2.3 The Modern Economic Growth School of Thought

Recent theoretical approaches to economic growth have established two different but competing schools of thought on economic growth. Both models are advancements on the previously existing models, and they have been categorised as exogenous and endogenous growth models.

Pivotal to the exogenous models is the seminal work of Solow (1956) and Swan (1956), which were originally aimed at catering for the drawbacks of the production function of the neo-classical school of thought. A particular feature of the neo-classical production function remains its isoquant curve. It presents flexibility for labour and capital combinations with constant returns to scale and diminishing returns to capital per labour. The exogenous model posits that growth is partially exogenously determined through technological advancement, and technology boosts productivity through an augmentation of labour. An implausible notion of this model, however, is that, since growth is a function of labour and its productivity, which are determined exogenously through technological advancements, investment, therefore, become less relevant for growth in the long run (see, Barrell and Pain, 1997). The capital-output ratio adjusts with fluctuations in savings and investments and maintains the stability of growth in the long term. Thirwall (2002) argues that these counterintuitive notions of the exogenous framework are the core basis that has driven the birth of the endogenous models.

Indeed the endogenous growth framework includes the role of externalities in understanding steady growth. Although the endogenous framework was only developed by economists of the 1980s and 90s such as Romer (1986), Lucas (1988) and Barro (1990), the core fundamentals of their frameworks were derivatives from previous seminal works of the classical and Schumpeterian schools. Externalities can be as a result of any factor involved in boosting labour productivity at aggregate levels. This emphasises the importance of investment for the endogenous framework in explaining long run growth, since investment can be used to sustain constant productivity as well as to increase productivity. Perhaps, it can be argued that characteristic features of the framework reveal a reincarnation of some of the notions

of the classical and Schumpeterian schools alike, while the relaxation of the Harrod-Domar knife edge is reflected in the exogenous framework.

4.2.3.1 The Exogenous Growth Framework

As earlier stated, exogenous growth, often referred to as the neo-classical model, was pioneered by the seminal works of Solow (1956) and Swan (1956). The theory posits that economic growth can be achieved through exogenous factors such as labour and capital stock accumulation. Barro and Sala-i-Martin (1995) opined that the relationship over time between accumulation of the capital stock and economic growth is positive. A thorough look at this theory reveals that, for growth to occur in an economy, the stock of available capital needs to increase on the basis that technology and labour stay constant (De Jager, 2004). Going further, it can be opined that economic growth in the short run is a function of the capital stock and this accumulation of capital is a function of the savings rate as well as the rate of depreciation of capital. However, economic growth is equally a function of exogenous factors like advancement in technology, which in the long run augment labour (Barro and Sala-i-Martin, 1995). In essence, this model postulates that the growth of economies is a function of its accumulation of capital as well as its labour augmentation.

Drawing inspiration from the Harrod-Domar growth equation, the Solow model posits that output (Y) is a function of two inputs: capital (K) and labour (L).

Mathematically it is represented as $Y = f(K, L)$ (4.15)

Where $K > 0$, $L > 0$

The features assumed for this function includes a constant returns to scale, positive marginal productivity and diminishing marginal rate of substitution. A natural growth rate is assumed for labour, i.e., $n = \Delta L/L$, as a result of exogenous growth in the population. Capital (K) is in line with the Harrod-Domar capital accumulation assumption of

$K_{t+1} = I_t + K_t(1 - \delta)$ where new capital stock (K_{t+1}) is a function of existing capital less depreciation ($K_t(1 - \delta)$) in addition to investment (I_t).

This is so due to the classical argument that income is either consumed or saved and that savings are invested ($S_t = I_t$). Therefore representing the fraction of income saved with the constant s , change in the capital stock over a period of time can be represented as shown in equations to 4.16 to 4.29 (see appendix 4).

The steady state of growth is achieved through a condition where each variable of the model grows at a constant rate over time. This implies a constant capital-output ratio (i.e. that as output grows, investment and capital stock grows proportionately), on the assumption that $I_t = sY_t$ and $K_{t+1} = I_t + K_t(1 - \delta)$. Therefore in the long run as all variables grow at equivalent rates, the growth rate will be decided by the growth of the supply of labour as well as its productivity. Changes in the savings rate and investment levels will transcend to proportionate changes in the steady state growth rate. "The steady state is however not a bad place for the theory of growth to start but may be a dangerous place to end" (Solow, 2000 p.7). Capital per capita growth is often higher for developing countries initially, however over time they tend to converge with those that already have high capital per capita ratio (Barro and Sala-i-Martin, 2004; McQuinn and Whelan 2007).

In the case of most developing countries, the domestic capital stock and technological levels often remain insufficient to drive the required growth levels. Foreign capital inflows come in to substitute for the deficiency in capital accumulation with the attendant technological transfers and can drive growth in developing economies. DeJager (2004), in explaining technology transfer explains that it leads to a boost in returns to capital through its augmentation of labour and improved productivity of the capital stock, which then drive the economy towards a new “steady state” through the resultant accumulation of capital stock. Herzer and Klasen (2008) explained that foreign capital inflows impact on short-run growth through the diminishing returns mechanism on capital; hence, promoting growth by raising the capital stock level within an economy.

A significant drawback to this framework has been its unfounded assumption of labour to be human capital. Indeed, labour has been well differentiated from human capital in advancements on this model. While labour is a function of the size of the working class in an economy, human capital has been distinguished as a function of the quality of the working class. According to (Barro and Sala-i-Martin, 1995 and DeJager, 2004), the framework remains deficient in the explanation of production, assimilation of technology as well as knowledge. Also, it does not allow for the explanation of the long run growth and advancement in technology.

Solow (1957) empirically analysed data from the US for the 1909 to 1949 period. The analysis was based on the assumption that technological advancement was important in growth determination. The basic Solow model is depicted as a production function. In accounting for changes in technology levels, a variable (t) is introduced, which considers shifts in the production function as neutral, as they can

decrease or increase output from a given input holding the marginal substitution rate constant.

$$Y = T(t)f(K, L) \quad (4.30)$$

Where $T(t)$ is the accumulation of shifts in the production function over time, Y is output and K and L are inputs of capital and labour respectively.

Mankiw, Romer, and Weil (1992) extended the Solow aggregate production function by the introduction of a human capital variable which is proxied by educational attainment. They found that this model explains cross-country income level variation, more particularly when augmented with human capital. They concluded that the model was consistent with empirical evidence, especially when taking into consideration human and physical capital inputs. Gundlach (2007) posits this to be the basis for essential changes in the textbook presentation of the Solow model. Since the pivotal work of Mankiw, Romer and Weil (1992), several empirical studies have been generated. Findings from studies, such as Islam (1995), Hall and Jones (1999) and Gundlach (2007) contrasts with the work of Mankiw, Romer and Weil (1992). For example Islam (1995) using a panel data approach found higher rates of conditional convergence and lower values of the elasticity of output with respect to capital compared to those of Mankiw Romer and Weil (1992). These results were explained in terms of correction for omitted variable bias involved with the single cross-section regression. Other studies such as Barossi-Filho, et. al. (2005) and Klump, et al. (2007) are consistent with the original work of Solow.

The debate on whether or not there is a need for the augmentation of the exogenous growth model is still ongoing. According to Thirwall (2002), many factors can cause a shift in output such as technological advances and institutional changes. The

exogenous model despite the augmentation, still presents a basic and relatively usable model for empirical studies. While, the strength of this model is in its simplicity and ability to incorporate various factors that can influence growth. Similarly, the weakness of the exogenous model also lies in its simplicity. The shortcomings include its inability to explain income per capita differences across nations. The unconditional convergence notion of the model which assumes ultimate equal income levels for all countries may be unrealistic. The endogeneity of factors influencing advancement in technology remains a challenge of this model. Although attempts have been made to exemplify technological advancement in variables such as labour and physical investment, this advancement remains exogenously determined. The model also posits that the steady state growth rate is indifferent to fluctuations in the investment level, implying that increase in the investment level will translate to increase in income levels. There has, however, been evidence that increase in investment positively and significantly affects growth rate in a country.

These downsides of the Solow model have continued to prompt heated debates and interest in the formulation of other growth models that take into consideration some of the downsides of the Solow growth model, hence, the birth of the endogenous growth models. The endogenous growth models are focused on providing more tenable explanations for some of the arguments of Solow which were acceptable at the time but are somewhat losing their tenability with more and more empirical tests and evidence.

Mankiw Romer and Weil 1992

As earlier mentioned, the study by Mankiw, et al (1992), although subjected to continued debates, remains a crucial contribution to the growth discuss. They examined whether the growth framework of Solow provides explanations for global

living standard variations. They presented a model which they termed as an augmentation to the original work of Solow which incorporates an accumulation of human capital as well as physical capital and tested this using a cross-country data set from 1960 to 1985 as constructed by Summers and Henston (1988). They found an inconsistency with the long-run steady state proposition of the Solow framework. They opined that the real output per worker level by country should have a positive correlation with the country's rate of saving, and a negative relationship with labour growth rate. Their study also examined the implications of the Solow growth framework for living standard convergence and found consistency with the convergence predictions of the augmented Solow model holding constant capital accumulation and labour growth. Their estimates of the Solow model inferred a proportion of factor income for capital to be about 0.60, which is high relative to the US conventional value of about 0.33. In addressing this inconsistency, they utilised their augmentation concept of the Solow model which symmetrically introduces human capital into the original capital and labour Solow model. They found that this new augmentation provides "an excellent explanation of their cross-country data".

This Pivotal work of the augmented Solow model by Mankiw, et al (1992), has however received extensive patronage especially in the significance of the introduction of qualitative factors to growth, such studies include (Durlauf and Quah, 1999). The analysis of the augmented Solow growth framework as by Mankiw et al (1992) was subsequently extended to panel data analysis by Islam (1995).

The fact that the Mankiw, et al (1992), model fits the cross-country data analysis remains an interesting result. However, it remains unclear as to what degree the goodness of fit of the Mankiw, et al (1992), specification can be attributed to the features shared with other growth models such as the Cobb-Douglas production

function and what fraction of this fit can be associated to the Solow specification such as exogeneity of the growth rate of the steady state. Indeed the primary estimation of the Mankiw, et al (1992), framework is consistent with all models of growth that consents to “balanced growth path”. This categorisation, however, captures perhaps all known growth models (Durlauf and Quah, 1999).

An advantage of the Mankiw, et al (1992), framework is that it can have a broader scope of individual growth, which is useful in evaluating since the policy implications of Solow growth model and other growth models such as the endogenous ones vary (Bernanke and Gürkaynak, 2002). They argued further that perhaps the Mankiw, et al (1992), framework had more potentials than its postulators utilised it, claiming that it could be used in analysing any growth model which assumes balanced growth path. They posited that the framework could be considered from two perspectives: (i) an applicable structure to any model that assumes steady growth path (ii) specific growth framework restrictions imposed on this structure such as the Solow model.

Assuming a given country at time t , with an output Y_t and inputs labour L_t and accumulated factors of types: K_t , H_t .²¹ The combination of these inputs, therefore, gives output, in line with the constant returns to scale Cobb-Douglas form. The model kicked off with the textbook statement of Solow.

$$Y_t = K_t(A_t L_t) \quad (4.31)$$

Where Y = total income, K = capital stock, L = Labour and A = technology parameter.

²¹ The inputs: H_t and K_t accumulated by the savings from current output, and are human and physical capital. It assumes advancement in technology through human capital as a result of learning by doing process under the assumption that it is accumulated as an economic activity by product which does not require current output sacrifice.

Mankiw, et al (1992) augmented this by introducing a symmetrical introduction of human capital as physical capital H which then gives

$$Y_t = K_t^\alpha H_t^\beta (A_t(L_t))^{1-\alpha-\beta} \quad (4.32)$$

See equations 4.33 to 4.37 for expansion (see appendix 4).

In the work of Mankiw, et al (1992), the saving rate of capital s_k was proxied by share of investment in GDP: this is based on equilibrium condition ($S=I$), the savings rate of human capital was proxied by the fraction of the labour force that are enrolled in secondary school. The estimation of this model by the use of cross sectional samples from across 98 and 75 economies respectively in 1985 resulted in significant improvements in the findings as against the original Solow model where there was no provision for human capital as a contributory factor to growth. Parameter estimates were found to be statistically acceptable. The implied income shares of both capital i.e (human and physical) were found to be plausible. The authors of the Mankiw, et al (1992), framework upon the findings of their studies concluded that, perhaps, the Solow model is more reasonable than previously conceived.

Although the Mankiw, et al (1992), framework was a, breath of fresh air in the growth discuss, their augmentation of the Solow model with the inclusion of human capital has generally improved its fitness, it has however continued to be subjected to various criticism on various grounds. While some have argued that the model is not actually an augmentation of the Solow work as there is some divergence in assumptions, others have critiqued it on the basis of its assumptions in itself. For example, Kalaitzidakis et.al (2001) critiqued the Mankiw, et al (1992), framework on the notion that it is restrictive in terms of its choice of proxy. This they did by picking

on the Secondary school level education as human capital definition. They argued that a more robust definition of human capital will explain a larger proportion of variation in income per capita.

4.2.3.2 The Endogenous Growth Framework

Critics of the exogenous growth framework have expressed concerns about its inadequate explanation of long-run growth. Cesaratto, (1999) highlighted that the inability of the exogenous model to explain technological advancement is a major drawback on its ability to explain growth. Technological advancement is one of the assumptions of the exogenous model, but the model failed to account for it. Solow based this on the assumption of perfect competition. Perfect competition models assume constant returns to scale and that factors of production are accounted for by marginal output, i.e., all output is expended on factor payments:

$$Y = F_k K + F_l L \quad (4.38)$$

Where: Y=Output, $F_k K$ and $F_l L$ are for capital and labour factor inputs receipts respectively.

Based on this model, the firm that is perfectly competitive therefore has no excess to finance research or patentable technologies or any other form of investment aside from payment for factors of production; hence, no options exist for an assumption of exogenous advancement in technology.

This assumption was widely accepted for a while as there were no alternative explanations for growth until a new generation of theories that endogenised growth process came around in the 80s and 90s. The birth of these models has revived the interest of economists to understand economic growth within different contexts. A

major contributor to this model is the seminal work of Paul Romer (1986), which led to the development of modern frameworks and models that accommodate investment in knowledge as a driver of growth. This seminal work of Romer indeed forms a platform for a host of theoretical reviews of the growth model. Barro and Sala-i-Martin (1995) provided an interpretation for the summation of the objectives of the growth model as by Rebelo (1991).

They considered a Cobb-Douglas aggregate production function as:

$$Y_t = AK_t^\alpha L_t^\beta \quad (4.39)$$

Where Y = total income, K = capital stock, L = Labour and A = technology parameter. No restrictions are placed on coefficients α and β as against the exogenous assumption $\alpha+\beta=1$.

These models, however, assume saving to be a constant fraction of gross income in an economy. The growth in the stock of capital can, therefore, be represented as expressed in equations 4.40 to 4.43 (see appendix 4).

The endogenous growth framework places importance on knowledge and human capital (Liu and Premus, 2000). For example studies, such as Romer (1986) and Lucas (1988), noted innovation, new knowledge and public infrastructure as three crucial drivers of growth. Romer (1990), Barro (1990), Grossman and Helpman, (1991), Aghion and Howitt (1992) among others have further developed the model. They all posited that externalities such as policies have a significant impact on long-run growth (Petrakos et al., 2007). The accumulation of knowledge process for these models does not have a constant assumption but is rather a characteristic of the model. Knowledge accumulation can be of diverse nature such as research and

development, skill acquisition and transfer at firm level, based on experience, innovation and new ideas in production techniques, managerial skill and organisational structure (Savvides and Stengos, 2008).

According to Rao and Cooray (2009) “the endogenous growth models focus on the very long-run and on the incentives for expanding the technological frontiers. This is not particularly useful for most developing nations, whose primary interest is in restoring short-to medium-term growth and accelerating technological catch-up by adopting already known innovations”. They argued that the potential of the Solow (1956) model and its extended variants such as the Mankiw, et al (1992), are inadequately explored. For example, the Solow model can be used to analyse the short to long run effects of investment on the level of growth. Pritchett (2006) noted that short to medium term transitional growth effects are of particular interest to the policy makers in developing countries because increasing the investment level is a relatively easier policy option to implement compared to institutional reforms.

The Solow model, when extended, is simpler to estimate and simulate to understand the dynamics of growth (Rao and Cooray, 2009). Apart from this it is difficult to state that one of these models is better than the other although there are some strong views against the merits of endogenous models. For example, Mankiw, et al (1992) argued that the Solow model can explain the observed growth evidences better than the endogenous models. Jones (1995) argues that observed time series evidences do not necessarily support the conclusions of the endogenous models. Solow (2000, p.153) himself highlighted that “the second wave of interest in growth theory the endogenous growth literature sparked by Romer and Lucas in the 1980s, following the neoclassical wave of the 1950s and 1960s appears to be dwindling to a modest

flow of normal science. This is not a bad thing.”²² The more important reason for the development of endogenous models is that the Solow model could not explain why countries grow at a sustained rate for long periods. The endogenous model on the other hand made significant progress in explaining convergence hypothesis. However, this may not necessarily be the immediate need of developing countries. According to Rao and Cooray (2009), developing countries are least interested in knowing whether per capita incomes in their countries will converge, in about 200 years, to the level of per capita income in the USA.

Subsequent extensions to the Solow model by Mankiw, et al (1992), have shown that the Solow model, if augmented with appropriate measures can satisfactorily explain growth dynamics of countries. Rao and Cooray (2009) concluded that an augmented version of the Solow model can be extended and used to examine the dynamic growth effects of policies both in the short and long run. They estimated the extended Solow model with data from Singapore, Malaysia and Thailand to check for the growth effects of variables such as the investment ratio, trade openness, and the ratio of government expenditure to GDP and human capital. They also concluded that there are a few more fundamental variables that may have larger effects on the long run growth of developing countries. For example Acemoglu, Johnson, Robinson and Thaicharoen (2003) find that institutional issues which characterise state fragility are more powerful than macroeconomic policy issues in explaining long run growth.

While the discourse on state fragility mainly emanates from the state-building perspective as a necessary prerequisite for transformation and development, recent studies have highlighted its growth hindering capacity as the starting point. For

²² See Parente (2001) for other criticisms of endogenous models.

example Maier (2010) explained that one reason is that fragility can be easily defined by low economic and social performance. According to Easterly (2005), modern growth models such as the augmented Solow model are able to explain the effects of prevailing national conditions and policies. Empirical findings tend to confirm the relevance of some these indicators. There is a growing list of growth determinants which include among others fiscal and monetary policy, political instability and institutions, among others (Alesina et.al, 1996; Barro and Sala-i-Martin, 2003; Acemoglu and Robinson, 2008).

Easterly (2005), however criticizes the fact that the large empirical effect of economic policies seem to depend on extreme observations in growth regressions and are not consistent with several stylised facts. Furthermore in fragile countries with the high level of social, economic and political instabilities, the theory would predict a modest effect of domestic policy on economic growth. A similar argument has been put forward by Rodrik (2007). His approach is hinged on the context specificity of growth-enhancing policies resulting from the limited generalisation that can be drawn from empirical research on the policy effects of growth. He first argued that neoclassical economic analysis does not necessarily lead to policy packages, but allows for a broad area of plausible policy activities adapted to the specific country context. Similarly, the World Bank (2005) report argued that general policy priorities need not be translated in a unique set of actions. In addition, different policies can yield the same outcome and the same policy can yield different outcomes depending on country institutional contexts and growth drivers.

The key insight of economic growth theory is that a high rate of capital accumulation fundamentally has a positive influence on growth. Fragile states are usually unable

to accumulate capital and often rely on foreign capital. Modern theories of underdevelopment argue that severe distortions and inefficiencies which characterise fragile states may hinder economic growth. The critical question then is to explain how state fragility affects economic growth. Since virtually all growth models consider capital as pivotal for economic growth and development to occur, a development economics perspective is therefore such that sees capital as an essential criterion for growth to occur irrespective of the source of such capital (Waheed, 2004). Other studies in modelling growth and capital accumulation in developing economies have broken down capital to reflect two forms of capital domestic and foreign (Akinlo, 2004; Driffield and Jones 2013; Adeniyi, et.al, 2015).

$$K_t = dK_t + fK_t \quad (4.44)$$

Where: K =capital, dK = domestic capital, fK = foreign capital, t = time specific effects

Driffield and Jones (2013) argued further that capital deficient countries; majorly developing economies have often relied mainly on foreign capital to supplement domestic capital to fast-track their growth. Their underlying theory is premised on a standard growth model where foreign capital (FDI, ODA and remittances) are introduced as components of investments (see Burnside and Dollar, 2000 and Catrinescu et.al, 2009). Theoretically, foreign capital has been shown to be beneficial to the host country (Prasad et.al, 2007). However the empirics do not provide a clear relationship²³. While Malikane and Chitambara, (2017) have argued that foreign capital inflow has a major impact for the economies of fragile state, Bénassy-Quéré, et.al (2007) have argued the possibility of an adverse impact on recipient countries.

²³ The lack of clarity in the literature are discussed In subsequent sections below

In the neoclassical growth model for instance, foreign capital promotes economic growth by augmenting the capital stock and/ or its efficiency (Li and Liu, 2005). In the endogenous growth model, foreign capital such as FDI raises economic growth by not just raising stock of capital but also generates technological diffusion from the developed countries to the developing host country (Borensztein et al., 1998). Foreign capital is often seen as a composite bundle of capital stock, knowledge and technology which can improve the existing stock of knowledge in the recipient economy through labour training, skill acquisition and diffusion, and the introduction of efficient management practices (Balasubramanyam et al., 1996 and De Mello, 1999).

Empirical studies on the impact of foreign capital on economic growth have produced mixed results. While a number of studies have indicated a positive impact of FDI on economic growth, others suggest a negative or insignificant impact on growth (Slesman et.al, 2015). In response to these inconclusive findings, a recent emerging view on the merits of foreign capital flows is that it does not come directly but is contingent on various host country initial conditions or absorptive capacities. In other words, there are certain conditions for developing countries to maximize the growth contribution potentials of capital inflows (Kose et al., 2011 and Alguacil et al., 2011). Klein (2008), for instance, reports that institutional environment plays a crucial role in facilitating the positive growth effects of capital account liberalization.

However, the connection of capital flows to growth seems to be more than just the connection through financing. According to Prasad et.al (2007), if financing were all that mattered, because it expands the resource envelope, then net foreign liability positions would be positively correlated with growth. They argued that the opposite is true: positive net foreign asset positions are positively associated with growth. They

posited that although developing countries do absorb some forms of capital inflows such as FDI, on net they rely little on foreign capital. This suggests that the full explanation for the relationship between growth and foreign capital inflows has to go beyond financing. Alfaro et al. (2008) suggested that the prevailing conditions in the host country institutional infrastructure, such as political stability, social cohesion and general macroeconomic may directly influence the volumes and types of capital inflows. According to Slesman et.al (2015), the ability of a developing country to attract foreign capital and more importantly for the capital to have significant contribution to growth depends on these issues as highlighted by Alfaro et al. (2008).

The case of the fragile states, first as developing countries but more importantly with severe challenges to development pose a challenge to their ability to attract foreign capital for domestic capital augmentation and for the foreign capital to effectively perform its augmentation expectations. For example, Holden and Pagel (2012) highlighted that the major reason why FDI flows to fragile state are resource motives and sometimes market seeking motives²⁴. They highlighted that fragile states, receiving investment purely for extraction may have other consequences as the literature suggests a link to further fragility.

Ingarm and Papoulidis (2017) highlighted the “new deal”²⁵ in dealing with fragile states. They critiqued the conditionality approach to development aid. They argued the challenge of state fragility is such that would ensure that fragile states are deprived of development aid. The development impact of foreign capital flows

²⁴ Resource seeking FDI: The resource seeking investors are motivated by their need for cheap resources including human, physical, technological or organisational resources. Market seeking FDI: The market seeking investment is motivated solely by entering new markets and increasing company's profits. This type of investment is justified by large market size and purchasing power of the consumers.

²⁵ The New Deal was born out of the recognition that development efforts were not sufficiently addressing the root causes of fragility.

remains widely debated Easterly et.al (2004). Dambisa (2009) argued that foreign capital can sometimes worsen the development potentials in recipient countries. Lum et.al (2013) posited that in the case of diaspora remittances, it can serve as a natural bridge into developed countries' markets; but clearly, when neglected or poorly conceived, government policy can represent a significant barrier to diaspora involvement. They argued that to a large extent, the positive impact of remittances depends on the existence of sound government policy designed to enable and encourage diaspora investment in areas of primary importance to the country. They therefore concluded that there is no certain relationship between the maximization of remittances as component of foreign capital and fragility. Some studies have argued that the inability of developing countries to maximise foreign capital in driving growth to be an actual signal of presence of state fragility. For example Tintin (2013) opined that the presence or absence of state fragility in a developing country is a significant factor for foreign capital inflow and for it to have the expected positive contribution to growth.

4.3 Empirical Review on Economic Growth, State Fragility and Capital Inflows

Scholarly efforts on the economic growth issue have created a significant amount of empirical studies and literature within the context of both developed and developing economies. This review will focus on previous studies on economic growth in developing and emerging economies as well as its relationship with state fragility and its dimension. It remains noteworthy that findings of studies on economic growth have only continued to reveal divergent outcomes. This review will initially focus on empirical findings in line with the theoretical frames earlier discussed before reviewing findings of capital inflows and economic growth.

4.3.1 Empirics of Modern Growth Framework

The roots of growth theories such as classical among others were premised on conditions obtainable in developed/advanced economies. The empirical testing of growth models in developing economies only started gaining momentum a few decades ago (Zarra-Nezhad and Hosainpour, 2011). Chenery et al. (1986) made a significant contribution to growth empirics. Their analysis focused on growth accounting framework, using the approach pioneered by Solow (1956). They found a significant unexplained residual which was attributed to technology. In developed economies, the residual made up about half of the growth rate. However, in developing economies, factor input explained about three-quarters of the growth rate while the residual accounted for about one-quarter of the growth rate. In a study of 12 Latin American economies by De Gregorio (1992), he found that the labour share in income in these economies is less than its share for developed economies, and in the fastest growing economies, the growth of factor productivity accounts for a substantial fraction of the growth. In his panel data, he found that aside from the pivotal role of capital both physical and human; macroeconomic stability is of crucial

importance. He, however, found growth to be negatively correlated to a lower degree with consumptions of government and political instability and terms of trade to be rather insignificant. Sachs and Warner (1995) with a sample size of 111 economies which were categorised along the lines of openness and closeness of the economies argued that for open economies there was a rather faster growth rate as well as convergence than for the closed ones.

Radelet et al. (1997) extended the neoclassical growth framework in analysing the rather fast economic growth of the Asian economies. They found that East Asian economies experienced somewhat faster growth than other economies across the globe. They attributed this growth to a combination of policies such as: macroeconomic stability, convertible currencies, relatively free trade and innovative institutions as well as incentives for foreign capital inflows amongst others. They argued that the South Asian economies that implemented somewhat protective policies and more extravagant fiscal policies recorded very little or no growth and increased poverty levels and widened inequality as the case may be during the period. They concluded that the difference between a fast-growing and a slow-growing developing economy is simply the nature of domestic economic institutions and policies they choose to pursue.

The debate around the contribution of capital to growth has however, continued to generate an empirical test for example Hall and Jones (1999) found that capital could only provide a partial explanation for the per capita output variation. They argued that a significant proportion of the variation in the Solow residual level can be evidenced across economies. They explained further that the differences in the accumulation of capital, productivity and per capita output are a function of differences in institutions and policies of government which they quantified in terms

of social infrastructure. They treated social infrastructure as an endogenous input and found a significant association between per capita output and their social infrastructure measure across a range of 127 countries. They found that economies that have had productivity friendly policies for a while had better per capita output. They cited the example of Niger and United States where more than 35 fold of per capita output difference can be explained by social infrastructure difference. Using a panel data set Hoeffler (2002) tried to explain the growth performance of African economies within the augmented Solow framework. The study found that after unobserved country-specific effects, as well as investment endogeneity, have been accounted for, the model can explain growth performance of African economies. They concluded that the low ratio of investment vis high growth rates of population alone is almost enough to explain the low growth performance of African economies.

In a similar vein, Senhadji (2000) empirically tested an augmented production function for 88 economies from 1960 to 1994. The empirics revealed that total production function contribution to growth is overall small in developing economies. The result provided support for conditional convergence as well as validates the application of augmented Solow model for economies with divergent economic structures. Life expectancy, capital account convertibility, and reserves to import ratio positively affect growth in an economy, while, ratio of external debt to GDP, war casualties to population ratio, real exchange rate and public consumption impact growth negatively. These findings, however, are quite useful for developing economies, as evidence from East Asia, India and China has continued to support it. Although longer periods may be required to ensure growth sustainability as there will be need for political stability, health, and human capital formation advancement as well as institutional reforms to sustain growth.

Prichett (2006) argued that despite, the quantum of growth literature and the progress made in the growth discuss, the concerns of developing economies is rather short to medium term growth and advancement of catch-up with technological frontiers through innovation adoptions as against the long run focus of mainstream endogenous growth frameworks. Similarly, Rao and Cooray (2008) investigated the gap between theoretical growth literature and empirical findings. They found a wide divergence between theoretical growth literature and empirical findings and the developing economies policy needs. They argued that the literature is rather focused on the long-term as against the short and medium term growth needs of developing economies. They opined that in bridging the gap, a modified version of the Solow model might be more compatible with understanding growth in developing economies. They tested this by taking a sample of Singapore, Thailand, and Malaysia, and found that in the short and medium term, investment ratio is affected by growth much more than growth in the long run. A dynamic simulation they made for Singapore revealed that these short and medium growth effects are higher to a significant level than that of the steady state for about ten years. Despite a few limitations Rao and Cooray (2009) opined and concluded that their framework is adequately suited for achieving short term and medium term policy needs of developing economies.

Indeed, empirical findings testing the performance of the exogenous model in explaining the growth performance in the developing world have continued to emerge. More recent periods have seen more specific analysis focusing on time series analysis that tries to capture growth experience in these economies as they have over the years expressed divergent growth performance and drivers. For example, Kweka and Morrissey (2000) conducted an empirical study on government

spending and economic growth in Tanzania from 1965 to 1996. The study focused on understanding the impact of government expenditure on growth performance of Tanzania, using the Engle and Granger technique. They found that while growth was positively associated with increase in consumption expenditure, physical expenditure had a negative impact and human capital was rather insignificant. However, Saad and Kalakech (2009) in investigating the impact of government expenditure on sustainable economic growth in Lebanon from 1962 to 2007 using a multivariate co-integration analysis, found a positive long-run relationship but negative in the short run. They, on the other hand, found expenditure on defence and health insignificant in the short run and negative in the long run and agriculture insignificant in both short and long run. Although Samimi and Habibian (2011) using a panel data set to investigate the impact of consumption expenditure of government in a set of 18 developing economies from 1990 to 2007 found a negative relationship.

More recent studies on developing economies have however continued to test and emerge with more empirical findings. Ahmad, et.al (2000) examined a sample of 54 economies made up of a mix of developed developing and underdeveloped economies. They grouped these economies into rich, upper and lower middle income and poor economies. This they did to evaluate commonalities among these various group of economies. They found no significant difference in the average of these four classes of economies, over time. Although slight fluctuations reflected in the averaged positions of lower middle income and poor classes, they, however, were not substantial. Acemoglu et al. (2006) in explaining the possibility of variation in findings of endogenous growth theories in developing and developed economies argued that technologies and sophistication used by developed economies when adopted by developing economies failed to yield optimal results. They hinged their

finding on divergence in human capital quality in these economies. They argued that these technologies were created for a workforce in the developed economies that could optimally utilise them to yield maximal results, which is not often the case with developing economies.

Kanu and Ozurumba, (2014) examined the impact of capital formation on the economic growth of Nigeria using the vector autoregressive estimation technique. They observed that in the short run, gross fixed capital formation had no significant impact on economic growth; while in the long term; the VAR model estimate indicates that gross fixed capital formation, total exports and the Lagged values of GDP had positive long-run relationships with economic growth in Nigeria. Shuaib and Ndidi, (2015) examined the capital formation impact on the economic development of Nigeria, using time series data from 1960 to 2013. From the empirical findings, it was discovered that there is a significant relationship between capital formation and economic development in Nigeria. They recommended policies that encourage savings, create conducive investment climate and improve the infrastructural base of the economy to boost capital formation and hence promote sustainable growth.

Sena and Fontele (2004) focused more on the major growth drivers for developing economies. They found key macroeconomic variables such as capital accumulation, and public spending contributes to growth in developing economies. They found that policy environment is very important for growth in developing economies. Petrakos and Arvanitidis (2008) studied growth determinants in both developing and developed economies by surveying experts such as policymakers, business owners, and academicians. The study was conducted to verify factors either inhibiting or promoting growth potential as well as their degree of significance. They found

divergent views on the determinants of growth for the developing and developed economies. While, for the developed economies, they found factors such as technology, human capital, innovation, and knowledge to be most important, in the developing economies, on the other hand, they found socio-political framework as the most important issue. In essence a simple neoclassical model is adequate in understanding growth particularly in developing countries.

4.3.2 Economic Growth and State Fragility

There is a small but expanding literature on the link between fragility and economic growth and development. According to Ferreira (2018), despite being at the core of the discourse on fragile states, the link between state fragility and economic development has only been examined in the context of cross-country regressions in a few studies.²⁶ Bertocchi and Guerzoni (2010) distinguish between empirical studies focusing on the direct impact of fragility on economic development, and those exploring an indirect effect through capital flows. In an early account, Chauvet et al. (2007) explore the costs of failing states, defined as the Low-income Countries under Stress (LICUS) that have been in this position for a continuous period of at least four years. Considering the period 1998–2001, they add dummy variables for failing states, for states in civil war, and for neighbourhood spill over to a growth regression, and then use ordinary least squares (OLS) and Generalized Method of Moments (GMM) methods to estimate the percentage of reduction in the growth rate. They conclude that being a failing state at peace corresponds to a decrease in the growth rate by 2.6 per cent when compared to countries at peace with adequate policies

²⁶ The field of political science is not short of accounts of the challenges imposed by failing and failed states, especially before the fragile states term came into use. However within the economic growth framework, the empirics are only recently emerging.

and governance. Furthermore, a switch from peace to war leads to a further reduction in growth of 1.6 per cent.

Bertocchi and Guerzoni (2011) employ the OECD definition of fragility within a yearly panel dataset covering sub-Saharan Africa in the 1999-2004 periods. Following the benchmark specification of Barro (1991) and Bertocchi and Canova (2002), they include in their growth regressions an initial condition for per capita income and a wide range of economic, demographic, geographic, and institutional factors. Their results indicate that the conventional measure of fragility employed by the OECD exerts no effect on economic development, once standard regressors are accounted for. However, when they apply a more severe definition of fragility, which only includes the countries in the bottom quintile, they find a clear, negative impact of this condition. Using a comparable sample and the OECD conventional definition, Balamoune-Lutz (2009) highlighted that fragility exerts a non-linear impact on per capita income and that it rather tends to alter the performance of other growth driver. In a subsequent study, Bertocchi and Guerzoni (2012) examined the relationship between fragility and various economic social and political variables. Their central finding was that social and political variables are adversely affected by fragility directly. They however did not find any clear relationship between state fragility and economic variables. In particular they found no significant relationship between GDP per capita and fragility after controlling for other economic variables such as investment. Ferreira (2018) which is the most recent addition to the direct state fragility and economic growth link literature, using a neoclassical growth model found that the estimated coefficient did not show any robust effect between a unidimensional measure of state fragility and growth. However the result for the disaggregated measure for state ineffectiveness had a significant negative effect on

economic growth. The conclusion for the effect of political instability is less clear-cut. In contrast to the expectation, they recorded some evidence suggesting a positive effect, but the result was not robust.

Fosu (2009) explores the growth impact of policy syndromes, which is in turn close to fragility since it refers to a condition involving civil wars and acute political instability.²⁷ His findings are that the absence of policy syndromes encourages growth in Africa. The potential endogeneity of fragility is a serious concern, which has been addressed by Bertocchi and Guerzoni (2010) by gauging the links between fragility and other standard growth determinants. They find that within Africa, fragility tends to be shaped by institutional development, a conclusion which questions its exogeneity. In particular, the probability of a country having a fragile state appears to decrease with the level of civil liberties and to increase with the number of revolutions, while economic factors do not matter. These findings differ sharply from those presented by Carment et al. (2008) for a world sample, over which per capita income appears to be the main driver of fragility. This radically different conclusion can be explained, once again, by the specificity of the African region, but also by the fact that the former study employs the OECD definition of fragility, while the latter employs the index of failed and fragile states.

Beside these empirical investigations, Besley and Persson (2011) propose a theoretical framework to understand how fragility can hamper development and growth. They highlight how a state may become fragile in situations of ethnic and religious conflict, high political instability, and heavy economic distortions, and how fragility may in turn lead to poverty traps. It is cautioned that “economic growth is no panacea to state fragility” (Naudé, 2012, p. 3). Suhrke and Buckmaster (2006) using

²⁷ see Fosu and O’Connell, 2006, for a definition of policy syndromes

seven post-conflict states²⁸ found no strong relationship between stability and economic growth. Collier, Hoeffler and Söderbom (2007) however, concluded that economic development substantially reduces the risk of tension in a fragile situation using 74 post-conflict states.

Several empirical investigations have tested the effects of various fragility dimensions such as political instability on economic growth in several economies. These studies have established the relationship between political stability and economic growth in various ways. For instance, using cross sectional analysis Barro (1990) found that economic growth is affected negatively by political instability as property rights are hardly implemented in unstable political situation. In a similar manner Fosu (1992) used cross-national data and a single equation model to investigate the effects of political instability on economic growth in sub-Saharan Africa for 1960-1986. They found a significantly negative direct relationship between political instability and economic growth after controlling for other economic variables. Devereux and Wen (1996) argued that unstable political situation discourages private investments which in turn affects economy negatively.

Alesina and Perroti (1996) used three different variables to proxy for the political instability and found it causing a decrease in economic growth. According to Edward (1998), there exists a negative relationship between political instability and productivity growth for a panel of 93 countries for the period of 1960-1990, though the relation was relatively weak. Gyimah-Brempong and Traynor, (1999) explores the relationship between political instability and economic growth in Sub-Saharan African nations. They used a comprehensive measure of political instability that was developed using a principal component analysis technique and analysed it in a

²⁸ Bosnia, Cambodia, El Salvador, Guatemala, Mozambique, Nicaragua and Rwanda

simultaneous equations model and dynamic panel estimation approach. They found a statistically significant inverse relationship between political instability and economic growth identified by earlier studies. In addition to the direct impact that political instability has on growth, they also suggested that political instability indirectly decreases economic growth by decreasing long-run capital accumulation. They argued that the broad measure of political instability used in the study can better capture the effects of political instability on economic growth than 'elite' instability that has been used by earlier researchers.

Taking a panel data of four countries, Bildirici (2004) examined the relationship between political instability and economic growth. The study found out a negative relationship between the variables under study, Drazen (2000) identified two reasons for which political instability affects economic performance. Firstly, it creates uncertainty about future return from the investment of firms and private agents, which inhibits the society as a whole to accumulate physical capital. Again, there is a direct effect of political instability on productivity as it distorts the functions of the market. Lower economic growth due to lower human capital accumulation owing to endemic political instability is the finding of Maloney (2002) for his study of Latin American countries. Yunis et. al (2008) investigated the effects of various political instability factors on economic growth for selected Asian countries during 1990-2005. The study found close relationship between political stability and economic growth and the results showed that the role of political stability is more important than economic freedom. Aisen and Veiga (2010) used GMM estimator for linear dynamic panel data models on a sample of 169 countries, and 5-year periods from 1960 to 2004 to investigate the link between political instability and economic growth, and found that lower growth is associated with higher degree of political instability.

Butkiewicz and Yanikkaya, (2005) combined both social and political instability to analyse the effects of socio-political instability on growth, for a panel of countries over a 30-year period. They found a weak relationship between socio-political instability and growth. They found that political instability in particular has the greatest adverse effects on growth. Also, the impact of socio-political instability is greater in countries with high levels of development and democracy.

Country specific studies include the studies by Munoz (2009), Asteriou and Price (2001) and Campos and Karanasos (2007). Munoz (2009) used ARDL framework to investigate the link between political instability and economic growth for Venezuela for the period of 1983-2000. They found that political instability affects growth negatively but not through the channel of investment. Asteriou and Price's study was to test the influence of political instability on UK economic growth for 1961-1997 using GARCH-M model. Their study revealed a negative effect on growth. Also, Campos and Karanasos (2007) used power ARCH framework with yearly data for Argentina for the period 1896-2000 and came up with the conclusion that both the informal political stability (assassinations and strikes) and the formal political stability (constitutional and legislative changes) have direct negative effect on economic performance. The effect of formal instability was stronger in the long run while the effect of informal instability was stronger in the short run in their study.

Asteriou and Siriopoulos (2000) examined the relationship empirically for Greece and found strong negative association. Abeyasinghe, (2004) reported that, political stability regardless of the level of democracy has the greatest effects on the country's economic growth. Few studies however found a negative relationship between political stability and economic growth. Goldsmith (1987) found that for LDCs, political stability negatively affected economic growth. However, it was only to

a little extent. Ahmed and Pulok (2013) investigated the direct effect of political stability on the economic performance of Bangladesh for the period of 1984-2009. Their study found out that, political stability has negative effect on economic performance in long term while the short run effect is positive. Nomor and Iorember, (2017) empirically investigated the relationship between political stability and economic growth in Nigeria for the period 1999 to 2014 using the ARDL model approach. The result revealed a positive and significant relationship between political stability and economic growth both in the long run and in the short run. The study concludes that a stable political environment is an indispensable element for economic growth.

A broader stream of research has tried to uncover the economic and non-economic determinants of a wide range of institutions. The connection with this literature comes from the fact that in discussing state fragility, institutions play a crucial role. North (1981) has become the standard reference for the idea that institutions shape economic outcomes and are in turn affected by them. Engerman & Sokoloff (1997) show how factor endowments shape economic and political institutions through history. Acemoglu, Johnson & Robinson (2004) distinguish between economic and political institutions, while Acemoglu & Johnson (2005) unbundle the relative importance of property-rights vs. contracting institutions.

Over the last decades, there has been an increasing focus on governance and a tendency towards assessing its level by using the lenses of the state, and underlining the importance of state capacity as an essential feature for effective governance (Savoia and Sen 2015: 442). Due to its multidimensionality, state capacity has been conceptualized and measured in a variety of ways, and different authors have focused on different mechanisms through which the state affects

development outcomes²⁹. Evans and Rauch (1999) find a strong association between ‘Weberianness’ and economic growth in 35 emerging economies for the period 1970–90. Their ‘Weberianness Scale’ is a measure of the degree to which meritocratic recruitment and the offer of predictable, rewarding long-term careers characterizes core state agencies (Evans and Rauch 1999: 749). The results in Bockstette et al. (2002) show a positive association between state antiquity and economic growth for 94 countries over the period 1960–1995.

Another line of work uses measures of institutional quality in the empirical analysis. Focusing on the period 1974–1989, Knack and Keefer (1995) found that institutions that protect property rights are crucial for investment and growth. Extending the period until 2000 and using three alternative measures for the level of corruption, including the International Country Risk Guide (ICRG) index, Mendez and Sepulveda (2006) concluded that there is a non-linear relationship between corruption and growth, with corruption being favourable at low levels of incidence and harmful to economic growth at high levels of incidence. Bosworth and Collins (2003) argue that a part of the cross-country variation in economic growth over the period 1960–2000 can be explained by the quality of the governing institutions (e.g. law and order, absence of corruption, and protection of property rights). Some authors have started to unpack the concept of state capacity by distinguishing between different components³⁰. For instance, using different indicators of governance from the World Bank’s Worldwide Governance Indicators database, but focusing on the impact of regulatory quality, Jalilian et al. (2007) suggests that there is a strong causal link between this dimension and growth.

²⁹ Cingolani (2013) present an overview of the state capacity concept

³⁰ Bardhan (2016), present a comprehensive overview of the different components of state capacity

While there are scanty studies focused on understanding the direct role of fragility on economic growth, however, studies focused on various dimensions of fragility such as political instability, corruption religion and its implications for the economy have evolved. Indeed, current growth models have not fully understood cultural variables and country-specific issues. Leiknes (2009) examined how norms and societal goals affect economic growth and development. The study found that among attitude towards institutions, religion and overall trust in society are quite significant for an economy's growth trajectory. He found an inverse relationship between religion and economic performance. Easterly and Levine (1997) suggested ethnic and religious fragmentation while Van Hear (1998) found diasporas playing an influential role in the onset and course of conflict. The literature on conflict, war, and failed and fragile states while important for the understanding of the causes of state fragility and implications of the national security dimension of development, may however be too narrow a lens for broader economic development policy options.

While the above contributions focus on the direct link between fragility and development, others have looked at its indirect influence through capital flows. Since the condition of fragility is a crucial determinant of the amount of capital that flows to a country. In essence growth can therefore be affected by fragility also through this channel.

The interaction between aid and fragility is addressed in a number of studies, none of which is specifically focused on Africa. However, given the preponderant role played by African countries among fragile ones, their results are still useful to the present perspective. Burnside and Dollar (2000) provide evidence that aid is most effective in developing countries with sound institutions and policies. However, this conclusion is questioned on several grounds by Hansen and Tarp (2001), Dalgaard

et al. (2004), and Rajan and Subramanian (2008). McGillivray and Feeny (2008) study the growth impact of aid in a world sample of fragile countries and find that it depends on the relative degree of fragility.

Chauvet e Collier (2008) analyse the preconditions for sustained policy turnarounds in failing states and show that aid matters, but its effect depends on its kind (e.g., financial aid vs. technical assistance). As emphasized by the theory proposed by Besley and Persson (2011), fragility is closely associated with conflict. Therefore, the literature that has evaluated the growth impact of conflict is also relevant. Examples within this stream include Collier and Hoeffler (1998, 2002), who search for the economic causes of conflict and then establish that Africa is indeed more vulnerable to it, because of its poverty; Blanton et al. (2001), who focus on the relationship between colonial domination and post-colonial ethnic conflict in Africa; and Bleaney and Dimico (2011), who distinguish between the correlates of the probability of onset of civil war and the probability of its continuation.

In essence, the introduction of the broad concept of fragility, which reflects a complex combination of the dysfunctions that are typical of several African countries, has stimulated renewed interest for research on the deep roots of development in the region. At the same time, a clear impact of fragility on economic outcomes has proved hard to assess, partly because of the different definitions employed and probably also because of its indirect way of reacting with the economy. The study therefore proceeds by reviewing the literature on how state fragility indirectly impacts on economic growth through capital flows. The uncertain policy environment and institutional weakness that characterises fragile states, suggests the challenges of optimising their capital inflow potentials as well as growth (Ostry, Berg, and Tsangarides, 2014).

4.3.2.3 Capital Flow and Economic Growth

The weak institutions, inadequate infrastructure as well as insufficient capital in fragile state economies have remained significant impediments to their growth. International capital inflows to these economies have provided considerable panacea in reducing the impact of these deficits. These inflows include Foreign direct investment (FDI), Official development aid (ODA) and remittance inflows. An increase in the level of these international capital inflows into fragile state economies can stimulate economic growth and welfare through various channels. Capital inflows augment domestic savings, promote domestic productivity through the transfer of technical skills and managerial knowledge; enhance financial development and support physical infrastructure development. The subject as to the growth impact of capital inflows in developing economies has remained a subject of extensive debate. Various studies have investigated these concepts within isolated frameworks. Perhaps the most investigated in developing economies is the growth impact of FDI as well as determining factors for the level of FDI received by a country.

Waheed (2004) argued further that capital deficient countries, mainly the developing economies of sub-Saharan Africa and Asia, have largely relied on foreign capital to supplement domestic capital to enhance their growth. However, he concluded that empirical evidence has failed to reach a consensus on the actual impact of foreign capital on the economy primarily because of methodological inconsistencies as well as data limitations. He noted that most of these studies were cross-country studies and identified the need for more country-specific studies that will factor in country-specific economic characteristics and realities.

Two main theoretical perspectives are used to explain the effect of capital flows on an economy: The neoclassical and structuralist views (Klobodu and Adams, 2016). The neoclassical view posits that capital-deficient economies as is characteristic of fragile states with a decent level of openness will attract foreign capital from capital surplus economies to supplement domestic capital and in essence growth and development. The economic welfare benefit of this process is not just limited to the reallocation of surplus capital but includes efficiency gains (Summers, 2000). An underlying assumption, in this case, is that capital flows complement domestic sources, bridges foreign exchange gaps and supplements domestic investments. It provides substantial direct and indirect spillover effects such as access to managerial and technical know-how, access to foreign markets amongst others (Kose et al., 2006; Levchenko and Mauro, 2007). Delachat et al. (2009) reported a significant positive relationship between capital flows and economic performance in developing countries. Their position was hinged on their analysis conducted on 44 sub-Saharan African economies using data that from 2000 to 2007.

The structuralists, on the other hand, posit capital flows as potent in displacing domestic investment, and as such detrimental to the economy of recipients (Papanek, 1973; Bornschier and Chase-Dunn, 1985). More recently, it has been argued that capital flows to developing economies in the past few decades have widened income differentials between developing economies (Taylor, 1996; O'Rourke and Williamson, 1999). It is argued that foreign capital distorts the distribution of income in poor developing economies through the stimulation of inappropriate technology importation (Griffin and Enos, 1970). Gerschenkron (1952) posited that "in perfect capital mobility world, an increase in capital inflows may have

no impact on domestic investment levels since capital only flows to finance investment deficits on demand but does not necessarily stimulate demand by itself”.

Papanek (1973) investigated 85 developing economies and found capital inflow culpable of deepening foreign dependency in these economies. Similarly, Bussiere and Fratzscher (2008) examined 45 developing economies using a 1980 to 2002 dataset. They found that while financial openness may stimulate short-run growth, it, however, does not translate to medium and long-run growth. They conclude that the empirical evidence on the positive relationship between growth and capital inflow either remains murky or not robust enough. Gourinchas and Jeanne (2013) investigated capital inflow to non-OECD countries from 1980 to 2000. They found no evidence to support that the fastest growing of those countries received the most capital.

Carkovic and Levine (2002) opined that while there are logical rationales for the assumption of capital flow to drive growth, the empirical evidence may not be robust enough. Weeks (2012) investigated 31 sub-Saharan African countries from 1980-2008 and concluded that capital inflow impact in the region is overrated. Diao and McMillan (2017) utilised a framework that incorporated the coexistence of a closed and open modern economy and controlled for other activities that characterised modern African economies. They found that capital inflow only promotes growth in closed systems. Gossel and Biekpe (2014) found that economic growth in South Africa is driven by domestic capital and not foreign capital using data from 1995 to 2011. This kind of relationships has in recent times generated a lot of curiosity into the role of capital inflows in developing economies. The inability of capital inflow to effectively drive growth in most SSA countries has however been linked to the presence of state fragility (Tintin, 2013).

To understand the impact of capital flows on economic growth in developing economies, several studies have empirically evaluated the relationship at both total and individual type of flow levels (Aizenman et al., 2013; Gossel and Biekpe, 2014; Raheem and Adeniyi, 2015). This study, therefore, proceeds to investigate the relationship between the different types of capital inflow and the economic growth.

Foreign direct investment and economic growth

FDI is seen as a tool to boost productivity and economic growth in developing countries; however, the effect of FDI on economic growth in literature is largely ambiguous. Theoretically, there is a strong basis for expecting FDI to have a positive impact on growth but the empirical evidence supporting this is rather frail. Hermes and Lensink (2003) reckon that the circumstances in recipient countries determine the nature of contribution FDI makes. Alfaro, Chanda, Kalemli-Ozcan and Sayek (2004) examined the complementarities between FDI and financial development in driving economic growth; they explored the importance of having better financial markets in amassing full benefits from FDI. Developing countries expend a lot of funds to attract FDI in the hope that the presence of multinational companies (MNCs) will transform their economy (Moosa, 2002). However, evidence on the positive externality that FDI affords to these economies is mainly inconclusive. Haskel et al. (2007) concluded that the returns from FDI do not necessarily justify the investment used to attract them.

As an overview, the findings on the FDI–growth nexus are inconclusive. It is argued by Carkovic and Levine (2002) and Chakraborty and Nunnenkamp (2008) that the causal relationship between economic growth and FDI is characterised by a significant level of heterogeneity and varies across countries specific cases. Akinlo (2004) investigated the impact of FDI on economic growth in Nigeria for the period

1970 to 2001 using the error correction model (ECM). The results show that both private capital and lagged foreign capital have a small and insignificant impact on economic growth. This study, however, established the positive and significant impact of export on growth. Financial development which he measured as M2/GDP has a significant adverse impact on growth. This he attributed to capital flight. In another manner, labour force and human capital were found to have a significant positive effect on growth.

Ayanwale (2007), using the OLS estimation technique investigated the empirical relationship between non-extractive FDI and economic growth in Nigeria. He found that FDI had a positive link with economic growth but doubted the overall effect of FDI on economic growth as it may not be significant. Ajide and Adeniyi (2010) investigated the causal relationship among FDI, economic growth and environment using the Autoregressive Distributed Lag (ARDL) approach by applying the annual time series data for the period spanning 1970- 2006. The findings show that there was no existence of a long-run relationship between FDI and growth on the one hand while there exists a long-run causal link between environmental quality and FDI inflows on the other hand.

Remittances and economic growth

In the case of remittances, although some studies have suggested unfavourable effects or relationships with other macroeconomic variables, evidence as to its positive effects in developing nations abound. For example, various studies have found that remittances positively influenced economic growth in developing economies (Mundaca, 2009, Giuliano and Ruiz-Arranz, 2009, Omobitan, 2012 and Laniran and Adeniyi, 2015). Other variables which have been found to be positively influenced by remittances inflows include a reduction in poverty (Adams and Page,

2003), development of financial sector (Giuliano and Ruiz-Arranz, 2009, and Aggarwal, et al. 2011) and output volatility smoothening (Chami et al., 2009). Kapur (2005) posits that remittance inflows provide a relatively stable source of foreign capital to developing economies particularly those faced with challenges of socio-economic and political unease. Quite a lot of the empirical evidence on remittances and output volatilities in developing economies suggest that remittances inflow are resilient to economic volatilities, thereby helping recipient economies militate against adverse business cycle effects (Ratha, 2003; Kapur 2005; Chami et al., 2009; and Jackman et al., 2009). However, studies with contrary perspective do exist (Lueth and Ruiz-Arranz 2008; Chowdhury 2011; Ahamada and Coulibaly 2011 and Mallaye and Yogo2011).

ODA and economic growth

Empirical evidence on the impact of ODA on various economic outcomes provides a mixed finding across the developing world. For example, Doucouliagos and Paldam (2010) using a meta-analysis to test the effectiveness of ODA found the growth impact of ODA to be positive but insignificant. According to Roberts (2003), evidence as to the ability of ODA in achieving development objectives often rely on the public expenditure program effectiveness in a country. He suggested that there was a seeming relationship between fiscal ability in an economy and ODA effectiveness. Burnside and Dollar (2000) provided an earlier argument as to the positive relationship existing between institutional structure and domestic policies in ODA receiving countries. Boone (1996) found no growth impact of ODA in developing economies. In a more recent study by Rajan and Subramanian (2007) empirical evidence as to growth impact of ODA was not found to be significantly robust. They, however, argued that these findings could be attributed to weakening governance as

a result of aid inflows itself which in return weakened the growth impact of ODA. Nowak-Lehmann et al. (2012) did a robust study on the ability of ODA to improve per capita income in developing economies. They found an insignificant or negative significant relationship between ODA and per capita income in economies with varying human development levels. Burnside and Dollar (2000) studied the interactions among a choice of macroeconomic policies and growth and revealed that aid is beneficial to countries that adopt appropriate and stable policies. However, the study revealed no evidence that foreign aid encourages the adoption of good macroeconomic policies. The study then showed that foreign aid is a waste to countries without appropriate and stable domestic policies.

Ekpo (2011) examined the nature, scale, use and impact of aid flow to Nigeria during the period 2002-2008. The analysis shows that aid increase during the period 2004-2008 was partly due to the Paris Club debt forgiveness in the country and the aid impacted positively on GDP per capita during the period under review. Also, in a similar study conducted by Ekpo and Afangideh (2012), they examined the challenges, policies, principles, and impact of official development assistance (ODA) on economic performance in Nigeria from 1970-2010. The result shows there is a positive but insignificant relationship between ODA and economic development in Nigeria and also found a significant relationship between capital expenditure and economic development while oil revenue indicated a negative relationship with agricultural output. Kolawole (2013) examined the impact exacted by foreign assistance in the form of official development assistance (ODA) and foreign direct investment (FDI) on real growth in Nigeria over the period 1980 to 2011. The results reveal that there is no causality between any pair of the variables. Findings of the

study also established a negative relationship between FDI and real growth as ODA exerts no impact on real growth in the country.

4.4 Chapter Summary

This chapter has provided a review of available literature on economic growth, capital inflows and the relationship between fragility and the economy. It has also set up the theoretical framework for this research by reviewing relevant literature available on the individual variables. It has also revealed that regarding empirical evidence, issues regarding how the exhibition of state fragility affects the economic performance remain not clear, as there is relatively very scanty empirical evidence as to the role of state fragility on economic performance. As a matter of fact what becomes clear from the literature are the recently continued calls for further research to investigate the economic cost of fragility in the fragile state economies. Also regarding the methodological approach to the growth and capital flow literature, especially the time series literature, it appears that Co-integration estimation techniques although various variants of it have been the most widely utilised. Also while a more significant percentage of the literature across the board has focused on FDI relatively less attention has been placed on other forms of capital inflow such as ODA and remittances.

CHAPTER 5: CAPITAL FLOWS AND ECONOMIC GROWTH IN NIGERIA: DOES STATE FRAGILITY MATTER?

This chapter presents an empirical investigation into the implications of state fragility for capital flows and economic growth in Nigeria. It does this by presenting a theoretical framework for the investigation before engaging in a stepwise approach in conducting the empirical analysis that will inform the conclusions of this chapter.

5.1 Introduction

Recent growth in Africa has not been accompanied by structural transformation or reduction in unemployment levels and has not been inclusive (AERC, 2015). This raises the issue of what drives the witnessed growth. Kaplan (2015) opined that perhaps the prevalence of fragility in most of these African economies explains the socially inefficient growth experienced. Interestingly, quite a lot of the existing models on economic growth as an area of academia as well as research interest tend to be sightless to fragility and its manifestations in fast-growing African economies. Some of the most significant exhibitions of dimensions of state fragility have included a youth population bulge, resource dependence, armed conflicts and economic instability among other germane issues. High inflation rates have been exhibited by hitherto relatively stable middle income, fast-growing economies or economies with substantial growth potential. This diverts the attention of external observers from the internal strains of fragility within such economies.

The economic, social and political environment in fragile states is generally not conducive for capital inflow, a potential driver of growth. Due to their fragility, these economies often may not be able to mobilise their domestic capital optimally, raising further questions about their growth experience. It, therefore, becomes crucial to

understand the impact of state fragility on economic growth and capital flows. Given the multiple sources of state fragility and the reinforcing interactions among them, fragile countries find it very difficult to build resilience, and many seem to be caught in a “fragility trap”³¹. This makes the transition out of fragility neither rapid nor straightforward. For instance, it is estimated that, of 26 sub-Saharan African countries identified as fragile, only 12 could be expected to become more resilient by 2039 (Cilliers and Sisk 2013). However, some of these economies have maintained a positive growth trend.

According to the OECD (2015), fragile states have received more development assistance and remittances per capita than other developing economies, however, in terms of foreign direct investment (FDI), the trend has appeared to be almost the opposite. Disaggregation of capital flows reflects acute volatility in FDI to developing countries between 2000 to 2012. Capital flows to developing economies (fragile states inclusive), maintained an upward trend through the 2000s until the financial crisis. Post-crisis periods, however, saw the steady recovery of FDI flows to almost pre-crisis levels in non-fragile developing countries by 2012. However, on aggregate, FDI to fragile states has not maintained the same trend as discussed earlier in chapter 1 (see appendix 1.1 to 1.3).

In a previous publication by the OECD (2013), it was estimated that, despite general trends, some fragile state economies have witnessed significant levels of capital inflows. For example, it was highlighted that Nigeria had remained the fragile state with the highest levels of FDI for over a decade, although its share of total FDI to fragile states dropped from 29.8 percent in 2005 to 21.9 percent in 2010. It was

³¹ A closely interlinked circle of reinforcing interplay of state fragility dimensions which manifests as inadequate economic development, political instability and lack of social cohesion (Cilliers and Sisk, 2013).

noted further that more than three-quarters of FDI to fragile states went to only seven fragile states, coincidentally, all of which are resource-rich states. Diaspora remittances to Nigeria have followed a similar trend, with a total of 21.1 percent of total remittance flows to fragile states in 2010 making it the second highest remittance recipient fragile state from 15.4 percent in 2005 when it was third. However, regarding development assistance, Nigeria ranked 8th by 2010 with a total of 4.1percent of development assistance to fragile states, from a 2005 rank of 2nd with a total of 11.5 percent (OECD, 2013) (see appendix1.1 to 1.3).

Contemporary economic analysis is certainly yet to adequately and efficiently comprehend the various forms of mutual interactions and feedback systems of fragility on the economy. Most attention to state fragility over the years has appeared to be coming from the humanitarian point of view. It is, however, impossible to deny that fragility defines both the social and economic environment within a country. This chapter, therefore, proposes to investigate whether the role of state fragility really matters for economic growth and capital inflow by conducting a country-specific study for Nigeria.

The remainder of the chapter is organised as follows: section 5.2 discusses the theoretical framework on which the analysis of this study is built on. Section 5.3 focuses on the empirical models and data analysis, while section 5.4 discusses the results and the fifth section concludes the chapter.

5.2Theoretical Framework

This study adopts a growth accounting model, where economic growth is the measure of economic performance, and for economic growth we look at real output

per capita. The approach used in modelling accounts for a country's production through a simple Cobb-Douglas production function:

$$Y_t = A_t K_t^\alpha L_t^\beta \quad (5.1)$$

Where: Y=output level; A= productivity level, K= capital stock, L = labour and t = time.

As discussed earlier, Driffield and Jones (2013) argued that capital deficient countries, particularly developing economies, have often relied on foreign capital to supplement domestic capital to fast-track their growth i.e. $K_t = dK_t + fK_{it}$ where dK = domestic capital, fK = foreign capital. Their underlying theory is premised on a standard growth model where foreign capital (FDI, ODA and remittances) are introduced as components of investment (see Burnside and Dollar, 2000 and Catrinescu et.al, 2009). Studies have also linked the performance of these flows as indicators of fragility in an economy and indirect channels through which state fragility can have implications on an economy (Tintin, 2013).

Weak institutions, inadequate infrastructure and capital scarcity are highly associated with developing and fragile state economies and have remained major impediments to their growth. International capital inflows to these economies have contributed significantly in reducing the impact of capital scarcity. These inflows include foreign direct investment (FDI), official development aid (ODA) and remittance inflows (REM). An increase in the level of international capital inflows into a developing economy or fragile state economy can stimulate economic growth and welfare through various channels (Hasen, and Giorgioni, 2007). However, the ability of an economy to fully optimise this capital inflow varies across type of inflow and other domestic issues in the domestic recipient economy. It is argued that capital

inflows augment domestic capital, promote domestic productivity through the transfer of technical skills and managerial knowledge, enhance financial development and support physical infrastructure development. In line with previous studies, such as Driffield and Jones (2013), Nwosa and Akinbobola (2016) and Jawaid, and Saleem (2017), this study disaggregates capital stock (k), into domestic capital (dk) and foreign capital (fk). Further disaggregation of fk into foreign direct investment (fdi), remittances (rem) and official development aid (oda) was done to capture the individual relationships of each capital flow with economic growth. Other foreign capital such as portfolio investment and loans were not introduced due to data unavailability.

Given the assumption of constant returns to scale for physical inputs, (5.1) can, therefore, be rewritten as:

$$y_t = A_t k_t^\alpha \quad (5.2)$$

Where: y and k refer to output and capital stock in per capita terms respectively.

Taking into consideration the simple Keynesian capital accumulation rule,

$$\frac{dk}{dt} = sy - (n - \delta) k \quad (5.3)$$

Where: $\frac{dk}{dt}$ = rate of change of capital stock per capita; $sy - (n - \delta) k$ = savings after the deductions of depreciation of capital and labour force growth. s = gross savings as a share of per capita output, δ = capital depreciation and n = labour force growth.

Note: Keynes assumed $S=I$ Where: S = Savings and I = Investment

Solving where (5.3) is equal to zero provides a steady state solution for per capita capital stock; $k = sy/(n + \delta)$. Taking the log of equation (5.2) and substituting k with the steady state solution

$$\ln(y_t^*) = \left[\frac{1}{1-\alpha} \right] [\ln A_t + \alpha \ln \frac{s_t}{n_t + \delta_t}] \quad (5.4)$$

Where \ln =logarithm: natural log, (*) represents a steady-state signification

In line with Mankiw et al. (1992) countries gravitate towards their steady state as the following approximation:

$$\ln y_t - \ln y_0 = \lambda(\ln y_t^* - \ln y_0) \quad (5.5)$$

Where: y_0 represent initial per capita income level, $\lambda = (1 - e^{-\eta t})$ is the adjustment dynamics toward steady state where η is the convergence speed.

Therefore, the growth of output per capita can be expressed as:

$$g_t = (\lambda/t)(\ln y_t^* - \ln y_0) \quad (5.6)$$

Where g =output per capita growth.

By substituting $(\ln y_t^*)$ with equation (5.4),

$$g_t = \left(\lambda/t (1 - \alpha) \right) \left[\ln A_t + \alpha \ln \frac{s_t}{n_t + \delta_t} \right] - (\lambda/t) \ln y_0 \quad (5.7)$$

Since the study has adopted a neoclassical model, and in the neoclassical framework one key determinant of economic growth is capital, this study therefore looks at the prevailing condition within the country, as this can influence the performance of an economy and its drivers. To do so, measures of state fragility were introduced. The effects of state fragility were taken into account through the total factor productivity. Considering the importance of total factor productivity (A), similar to Temple and Johnson (1998), a generic form of A is represented as:

$$A_t = f(f_t) \quad (5.8)$$

Where f_t represents measures of state fragility

In line with the multidimensional approach to state fragility, as suggested by Bertocchi and Guerzoni (2012), Graveingholt et.al (2015) and Ferreira, (2018), this study introduces aggregate measures of state fragility as well as disaggregated dimensional measures of state fragility. As discussed in the previous chapter, these

include economic social and military and political dimensions. This helps us to understand which dimensions of state fragility have the most effects on economic growth. The corresponding coefficients measure how growth is affected by aggregate fragility and each of these dimensions, bearing in mind that higher levels of each of the measures of fragility and their dimensions are interpreted as higher levels of state fragility. Accordingly, it is expected that higher levels of fragility have a detrimental effect on growth; the expectation is that they have a negative sign.

By substituting A with equation 5.8 into equation 5.7, in line with Mankiw et al. (1992) and Temple and Johnson (1998), output per capita growth therefore becomes:

$$g = \phi_1 A_0 + \phi_2 f_t + \phi_3 \ln(s_t / (n_t + \delta_t)) - \phi_4 \ln y_0 \quad (5.9)$$

Where $\phi_1 = \lambda/[t(1-\alpha)]$, $\phi_2 = \lambda/(1-\alpha)$, $\phi_3 = \lambda\alpha/[t(1-\alpha)]$, and $\phi_4 = \lambda/t$

Within the policy oriented literature, such as World Bank (2015), indicators of the quality of government and its interventions in the realms of fiscal and monetary policy have been used as additional proxies for the stability or otherwise of the economy. Recent efforts that have contributed to the growth and fragility discussion have also used monetary and fiscal policy variables for robustness (see Bertocchi and Guerzoni, 2012 and Ferreira, 2018). Similarly, time series studies addressing the relationship between growth and capital inflow have introduced various variables to capture the macroeconomic environment. These studies include (Klobodu, and Adams, 2016; Nwosa and Akinbobola, 2016; Jawaid, and Saleem, 2017). In a similar vein, relevant variables to capture the macroeconomic environment were introduced into the model used in the study through the fiscal and monetary arms of the economy, using government expenditure and the money supply as proxies respectively.

The inclusion of a measure of quantification for state fragility will allow the model to evaluate the effect of state fragility on economic growth (Ferreira, 2018). Jalilian.et.al. (2007), in evaluating the impact of regulation on economic growth opined that the inclusion of a relevant qualitative and control variable improves the model and helped their model to assess the impact of regulation on economic growth. They did this in line with the specifications of Temple and Johnson (1995). In the context of this study, measures of state fragility used were in line with the existing fragility framework literature (Bertocchi and Guerzoni, 2012; Kaplan, 2014 and OECD, 2016). Since the main objective of this research is to investigate the impact of state fragility and economic growth, human capital was dropped because of multicollinearity with state fragility. In the process of indexing state fragility, human capital level was incorporated and as such explains the multicollinearity, hence, it was dropped.

The base model for this study, as earlier discussed, is such that it captures per capita output as a function of capital (domestic and foreign) and monetary and fiscal policies. Measures of state fragility are subsequently introduced to the base model at both aggregate and disaggregate levels. The results of these provide evidence as to the relationship between state fragility and per capita output. A comparison of the results of the base model without state fragility and with state fragility measures will provide support as to whether or not state fragility impacts economic performance.

The first model presents the base model that captures the relationship of capital flows and economic growth along with relevant variables to capture the macroeconomic environment. The second model presents an equally weighted average measure of state fragility introduced to the base capital flow and growth model. This measure of state fragility is used as most existing indices make use of

similar techniques founded upon simple addition of "equally weighed or uniform attributes". Rules of additive aggregation reveal that negative variance in the value of one variable will be compensated for by positive variance in another variable (Munck, 2009). However, the validity of this may largely be a function of the dimensions stipulated in the index. A case can, however, be made for this aggregation technique by arguing that the selected variables and indicators reflect the same unidimensional concept, or by arguing that although the variables do not covary, they are parts of one phenomenon and are "combined to form a whole" (Munck and Verkuilen, 2002). While the argument may be visible in a unidimensional phenomenon, in the case of a multidimensional phenomenon like that of fragility, perhaps the compensation argument becomes too simplistic, problematic and may defeat the purpose. Given the preceding, the third model presents a multivariate measure of state fragility, introduced to the base capital flow and growth model. The fourth fifth and sixth models present disaggregated measures of state fragility dimensions introduced to the base model. These dimensions are economic, social and military and political respectively.

5.3 Data Description

The summary of the variables used in the analysis, their respective representation and definition are presented and outlined in table 5.1 below. Data for this study were primarily sourced from the World Development Indicators of the World Bank data bank. Data was log transformed to stabilize the variance of the series.

Table 5.1 Growth Model Variable Definition and Description

Variable	Representation	Definition
GDP per capita (constant 2000 US\$)	Y	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products Data are in constant U.S. dollars. Source: World Bank Data Bank 2016.
Gross capital formation (%GDP)	DK	Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories as a percentage of current US\$. Source: World Bank Data Bank 2016.
FDI (%GDP)	FDI	This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors. Source: World Bank Data Bank 2016.
ODA(%GDP)	ODA	Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC). Source: World Bank Data Bank 2016.
Remittances (%GDP)	REM	Personal remittances comprise personal transfers and compensation of employees. Personal transfers consist of all current transfers in cash or in kind made or received by resident households to or from non-resident households as a percentage of GDP in current US\$. Source: World Bank Data Bank 2016.
Money Supply2 (%GDP)	MS	Money and quasi money comprise the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government. Source: World Bank Data Bank 2016.
Government Expenditure (%GDP)	GE	General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). Source: World Bank Data Bank 2016.

Table 5.2 Descriptive Statistics

	Y	DK	FDI	REM	ODA	MS	GE	F(EWA)	F(PCA)
Mean	7.368	5.236	3.586	2.529	2.134	5.922	4.954	3.927	5.817
Median	7.249	5.140	3.621	3.595	2.271	5.879	5.101	3.972	5.640
Maximum	7.838	6.546	4.921	5.489	5.035	6.856	5.651	4.203	8.470
Minimum	7.040	4.466	2.228	-2.276	0.039	5.118	4.156	3.688	4.135
Std. Dev.	0.261	0.586	0.687	2.567	1.137	0.389	0.451	0.1424	1.241
Skewness	0.587	0.512	-0.023	-0.543	0.123	0.087	-0.282	-0.017	0.737
Kurtosis	1.787	2.190	2.315	1.692	3.375	2.815	1.829	2.082	2.541
Jarque-Bera	4.270	2.558	0.708	4.333	0.302	0.097	2.531	1.265	3.577
Probability	0.118	0.278	0.702	0.115	0.860	0.953	0.282	0.531	0.167
Sum	265.237	188.482	129.092	91.050	76.821	213.183	178.330	141.388	209.340
Sum Sq. Dev.	2.391	12.038	16.508	230.677	45.231	5.288	7.115	0.710	53.936
Observations	36	36	36	36	36	36	36	36	36

Traditional time-series approach to studying this type of relationship is dependent on at least 25 observations for the analysis to be statistically significant. The period 1980 to 2015, which is the period of this study, has more than this and allows for the analysis to be credible, while maintaining a reasonably good degree of freedom in the model.

Econometrics theory does not have any single clear method for the detection and elimination of multicollinearity in a model but rather proposes several methods to detect and mitigate against its impact. A possible method to avoid this is conducting a prior correlation analysis of the variables intended for the model and eliminating any variable found to have a high correlation coefficient from the model. Some researchers have offered rules of thumb for interpreting the meaning of correlation coefficients, and by extension determining the degree of multicollinearity within a model but these rules of thumb are domain specific. Some researchers suggest that a high pair-wise or zero-order correlation coefficient value of 0.8 or above indicates

the existence of serious multicollinearity. However Gujarati (2004) argues that a high pair-wise correlation coefficient on its own is a sufficient condition for the existence of collinearity, but it is not a necessary condition for its existence within any given model. He points to cases where multicollinearity has been detected in model with correlation coefficients of less than 0.5.

Table 5.3 Correlation Analysis

	Y	DK	FDI	REM	ODA	MS	GE	F(EWA)	F(PCA)
Y	1.000								
DK	0.675	1.000							
FDI	-0.013	-0.431	1.000						
RR	0.513	-0.133	0.611	1.000					
ODA	0.403	-0.180	0.662	0.693	1.000				
MS	0.740	0.712	-0.154	0.127	0.007	1.000			
GE	0.561	0.571	-0.154	0.192	-0.191	0.654	1.000		
F(EWA)	0.304	0.062	0.260	0.396	0.201	0.107	0.035	1.000	
F(PCA)	0.046	-0.320	0.298	0.351	0.438	-0.055	-0.229	0.040	1.000

The result of the correlation analysis above in table 5.3 suggests a decent level of correlation across board. Generally no correlation exceeded the 0.8 coefficient value limit. The correlation is positive largely for most variables with economic growth except in the case of FDI which was very low and negative as well. In the case of domestic capital, remittances, Money supply and government expenditure, they have relatively decent levels of positive correlation to economic growth. In the case of state fragility, and ODA the correlations were positive but quite low.

5.4 Data Analysis

Preceding any meaningful regression analysis is an investigation of the individual characteristics of the variables as well as the collective characteristics of the model. To this effect, unit root test, co-integration estimates and lag selection are conducted and presented in Table 5.4, Table 5.5 and Appendix 5.1 respectively. The dynamics

of whether state fragility matters for the capital flows and economic growth relationship are presented in Tables 5.6 to 5.8.

5.4.1 Time series properties of Data

Investigating the time series properties before analysing the relationship among variables is crucial owing to the challenges that non-stationary series present in regression analysis. It is well established in the literature that an ordinary least square (OLS) regression estimate can produce spurious regression when the data used contain a unit root, except where co-integration exists (Hamilton, 1994). Therefore insufficient investigation of the existence of a unit root may result in estimates that may appear meaningful but in actuality are meaningless or inaccurate at best. To avoid this type of spurious estimate, stationarity properties are checked by unit root tests, namely Augmented Dickey-Fuller (ADF) (see Dickey and Fuller, 1979) and Phillips–Perron (PP) (Phillips and Perron, 1988). Results of unit root tests are reported in Table 5.4. Also, investigating the presence of a unit root gives an insight into the order of integration of the variables. Knowledge of this helps to ensure that the best fit estimation technique is applied. For example, it is argued that in the presence of $I(2)$ variables, the computed F-statistics provided by Pesaran et al. (2001) are not valid because the bounds test is based on the assumption that the variables are either $I(0)$ or $I(1)$ therefore suggesting that a combination of $I(0)$ and $I(1)$ is valid for the bound test (Ouattara, 2004b). The results of the stationary tests are presented in table 5.4 below.

Table 5.4: Stationarity Test Result

	ADF				PP			
	At Level		1 st Difference		At Level		1 st Difference	
	T STAT	PROB	T STAT	PROB	T STAT	PROB	T STAT	PROB
Y	0.039	0.956	-4.842	0.000	-0.364	0.905	-4.839	0.000
FDI	-2.878	0.058	-9.906	0.000	-2.769	0.073	-10.101	0.000
DK	-2.068	0.259	-2.366	0.059	-2.136	0.233	-4.631	0.000
REM	-1.087	0.710	-2.993	0.046	-1.040	0.728	-6.596	0.000
ODA	-2.489	0.127	-5.544	0.000	-2.015	0.279	-5.570	0.000
MS	-1.729	0.409	-5.051	0.000	-1.868	0.343	-5.093	0.000
GE	-2.424	0.143	-4.002	0.004	-2.470	0.131	-6.541	0.000
F(EWA)	-2.197	0.211	-6.223	0.000	-4.636	0.000	-20.252	0.000
F(PCA)	-21.690	0.000	-5.836	0.000	-14.082	0.000	-10.384	0.000
F(ECO)	-0.758	0.852	-4.980	0.000	-0.654	0.845	-5.040	0.000
F(SOC)	-1.167	0.676	-3.328	0.022	-0.218	0.927	-4.600	0.000
F(M&P)	-4.229	0.002	-9.341	0.000	-4.311	0.002	-14.649	0.000

Where: Y is Gdp per capita, FDI is foreign direct investment, DK is gross domestic capital formation, REM is Remittances, ODA is official development assistance, MS is money supply, GE is government expenditure, F(EWA) is fragility (equal weight average), F(PCA) is fragility (principal component analysis), F(ECO) is fragility (economic), F(SOC) is fragility (social) and F(M&P) is fragility (military and political).

The ADF test reveals a mixed level of stationarity. Variables F(PCA), F(M&P) and FDI were stationary at levels at 5, 5 and 10 percent level of significance respectively, while others are stationary at first difference. Other variables Y, REM, MS, GE, F(SOC), F(M&P) and F(EWA) were stationary at first difference at 5 percent level of significance and DK at 10 percent. The PP unit root test reveals a similar pattern. Variables F(EWA), F(PCA) and F(M&P) were stationary at level at 5 percent level of significance and FDI at 10 percent level of significance while others were stationary at first difference at 5 percent level of significance. Therefore, the unit root results confirm that some variables are stationary at level {i.e., $I(0)$ } and others at first difference {i.e., $I(1)$ }.

The maximum numbers of lags was determined using the Akaike criterion (AIC), Schwartz Bayesian Criterion (SC) and Hannan-Quinn Criterion (HQ). From the

results presented in Appendix (5.1), it is evident that most of the lag selection criteria produced similar results that suggested the selection of three lags.

5.4.2 Econometric Estimation Technique

To empirically explore the relationships identified in the objectives of this study, the study conducted multiple regression estimations. Econometric theory suggests that there is a long run relationship between variables under consideration (Klobodu and Adams, 2016). This means that the mean and variance are constant and time independent. However, empirical studies have shown that the constancy of the means and variances are not satisfied in analysing time series variables (Nkoro and Uko, 2016). To overcome this problem of non-stationarity, time series econometric analysis has increasingly gravitated towards the issue of co-integration. The rationale for this is that co-integration is a very useful tool for analysing the presence of steady-state equilibrium between variables. Co-integration has become an overriding requirement for economic models using non-stationary time series data. If the variables do not co-integrate, this suggests problems of spurious regression. In resolving this, various co-integration techniques have emerged.

In applied econometrics, the Granger (1981) and, Engle and Granger (1987), co-integration technique and, Johansen and Juselius (1990) co-integration techniques have been used to determine the long run relationship between series that are non-stationary, as well as re-parametrising them to the Error Correction Model (ECM). The re-parametrised result gives the long and short-run dynamics of the underlying variables. Recently, however, a series of studies by Pesaran and Shin (1996); Pesaran and Pesaran (1997); Pesaran and Smith (1998) and Pesaran et al. (2001) have introduced an alternative co-integration technique known as the 'Autoregressive Distributed Lag (ARDL) bound test. This technique has some

benefits over the Johansen co-integration techniques. According to Ghatak and Siddiki, (2001) the ARDL technique provides a more statistically significant approach to determine the co-integration relationship in small samples as in this study (with 36 annual observations per variable) while the Johansen co-integration techniques often require large data samples for validity.

Also, the ARDL technique does not require the same order of integration for all regressors as against other techniques (Ouattara, 2004a). It can be applied irrespective of the regressors being of the order of integration one $I(1)$ and/or level $I(0)$. The estimations can proceed with or without the knowledge of variables being of $I(0)$ or $I(1)$ (Pesaran and Pesaran, 1997: 304). This suggests that the ARDL technique does not necessarily require the pre-testing issues associated with other co-integration techniques, which requires variables classified into $I(1)$ or $I(0)$ (Pesaran et al., 2001). In the case where there is a mix or doubt with regards to the unit root properties of the data, applying the ARDL technique remains the most appropriate technique for empirical analysis (Bahmani-Oskooee and Nasir, 2004:485). They argued that the order of integration of a variable can be a function of the choice of unit root test used. Hence the contradictory results often recorded on a variable and concluded on the ability of the ARDL technique in avoiding this problem. It is, however, crucial to note that this technique crashes in the presence of a variable integrated of order two $I(2)$. To avoid a wrong application of the ARDL technique, it, therefore, becomes important to test for unit root.

In a similar vein, unlike most other co-integration estimation techniques, which are sample size sensitive, the ARDL is less sensitive to sample size and can produce reliable results with even a small sample size. Harris and Sollis, (2003), posited that the ARDL generates unbiased long-run estimates and valid t-statistics, even if there

are some endogenous regressors in the model. The procedures of the ARDL bound test is hinged on the joint F-statistics (Wald statistics) for testing co-integration (Odhiambo, 2009). The F-statistics asymptotic distribution is non-standard under the null hypothesis (Ho) of no cointegration. The computed test statistics has to exceed the value of the upper critical bounds for the null hypothesis to be rejected. The test becomes inconclusive if it falls within the bounds, and the null hypothesis gets accepted if the computed test statistics falls below the lower bounds (Pesaran and Pesaran, 1997 and Pesaran et al., 2001).

Another advantage of this technique over other techniques is its ability to avoid a lot of decisions which must be made before estimation as these techniques are very sensitive to these decisions. These decisions include the number of endogenous and exogenous variables (if any) to be included, the treatment of deterministic elements, as well as the order of VAR and the optimal number of lags to be used (Pesaran and Smith, 1998). They noted the ability of the ARDL technique to accommodate a varying number of lags for different variables in one model as against other estimation techniques which do not.

According to Pesaran and Pesaran (1997), the ARDL technique involves the following steps. The first step tests for the existence of any long-term relationship among the variables of interest using an F-test. In this stage, each behavioural equation is transferred to the error correction form of the underlying ARDL model. According to Pearsan et al. (2001), the error corrected version of the ARDL (p,q) for variables X_t and Z_t is represented as :

$$\Delta X_t = \alpha + \sum_{i=1}^p A_i \Delta X_{t-i} + \sum_{j=1}^q B_j \Delta Z_{t-j} + C_0 X_{t-1} + C_1 Z_{t-1} + \mu_t \quad (5.10)$$

Where X_t = endogenous variable, α = intercept, Z_t = explanatory variable and μ_t =error term

The F-statistics for the joint test of the coefficients C_0 and C_1 is computed to test for the long run relationship between endogenous variable X_t and explanatory variable Z_t . The null hypothesis is that the coefficients C_0 and C_1 in the equation above are both equal to zero (i.e. null hypothesis is that there is no long run relationship between endogenous variable X_t and explanatory variable Z_t). The computed F-statistics is then compared with critical value bounds of the tabulated F-statistics. If the F-statistics is higher than the upper bound of the critical value, the null hypothesis is rejected and vice versa (Narayan, 2004).

The second step involves the estimation of the coefficients of the long-run relationship, followed by an estimation of the short-run elasticity of the variables with the error correction representation of the ARDL model. This is only proceeded to if the null hypothesis in the first step is rejected. By applying the ECM version of ARDL, the speed of adjustment to equilibrium will be determined. According to Pearsan et al. (2001), the dynamic structure of the ARDL (p, q) model is represented as: $X_t = \alpha + \sum_{i=1}^p A_i X_{t-i} + \sum_{j=0}^q B_j Z_{t-j} + \mu_t$ (5.11)

Where the lag length for X_t and Z_t are p and q respectively and μ_t is the random error term.

The study proceeds by conducting a formal investigation for co-integration by using the ARDL co-integration technique, due to the nature of mixed integration among the variables. A direct regression of output per capita on the variables of interest is likely to produce biased estimates due to the well-known problems of time-series regression. To deal with these issues, the study utilises the autoregressive distributed lag (ARDL) or Bounds Testing framework of Pesaran and Shin (1999) and Pesaran, Shin, and Smith (2001). This framework is known to possess a number of advantages over the traditional co-integration models (such as Engle and

Granger, 1987, and Johansen and Juselius, 1990). Some of these advantages include; (1) appropriate for modelling limited data (2) applicability in data with a mixture of $I(0)$ and $I(1)$. (3) Different variables in the model can be assigned different lag-lengths (4) involves a single-equation set-up making it simple to interpret.

The estimates of the co-integration tests are presented in Table 5.5. The co-integration test revealed that the null hypotheses of no co-integration among the variables should be rejected, implying the presence of co-integration among the variables. This therefore suggests the existence of a long-run relationship among the variables in the model. The co-integrating result as presented in Table 5.5 below reveals that the calculated F-statistic for the six models³² to estimate the effect of state fragility on capital flows and economic growth is higher than the upper bounds levels at 5 and 1 percent for the base and fragility models respectively. The base model, aggregate state fragility model as well as the dimensional state fragility models all present existence of a long-run relationship.

³² Model 1 is base model

Model 2 is the base model with an introduction of an aggregate measure of state fragility using the EWA approach.

Model 3 is the base model with an introduction of an aggregate measure of state fragility using the PCA approach.

Model 4 is the base model with an introduction of a disaggregated measure of state fragility $F(\text{ECO})$

Model 5 is the base model with an introduction of a disaggregated measure of state fragility $F(\text{SOC})$

Model 6 is the base model with an introduction of a disaggregated measure of state fragility $F(\text{M\&P})$

Table 5.5: ARDL Bounds Test for the Impact of State Fragility on Capital Flows and Economic Growth

							F-statistics						
BASE							3.559***						
F(EWA)							7.034****						
F(PCA)							4.326****						
F(ECO)							20.761****						
F(SOC)							9.452****						
F(M&P)							4.472****						
Critical Values													
	I (0) Bound						I (1) Bound						
Significance (%)	BASE	F (EWA)	F (PCA)	F (ECO)	F (SOC)	F (M&P)	BASE	F (EWA)	F (PCA)	F (ECO)	F (SOC)	F (M&P)	
10	1.99	1.92	1.92	1.92	1.92	1.92	2.94	2.89	2.89	2.89	2.89	2.89	
5	2.27	2.17	2.17	2.17	2.17	2.17	3.28	3.21	3.21	3.21	3.21	3.21	
2.5	2.55	2.43	2.43	2.43	2.43	2.43	3.61	3.51	3.51	3.51	3.51	3.51	
1	2.88	2.73	2.73	2.73	2.73	2.73	3.9	3.9	3.9	3.9	3.9	3.9	

****, ***, **, * denote significance at 1%, 2.5%, 5% and 10% respectively.

5.4.3 Long Run Relationships

To empirically explore whether state fragility really matters for capital flows and economic growth, the study proceeds by investigating the long run relationship among the variables of interest in a consistent stepwise manner (Table 5.6).

The first model presents the base model that captures the relationship of capital flows and economic growth along with relevant variables to capture the macroeconomic environment. The second model presents an equally weighted average measure of state fragility introduced to the base capital flow and growth model. The third model presents the multivariate measure of state fragility, introduced to the base capital flow and growth model. The fourth, fifth and sixth models present measures of economic, social and military and political disaggregated dimensions of state fragility, introduced to the base capital flow and growth model.

Table 5.6: Long Run Relationship on the Impact of State Fragility on Capital Flows and Economic Growth

REGRESSOR	BASE MODEL	F(EWA) MODEL	F(PCA) MODEL	F(ECO) MODEL	F(SOC) MODEL	F(M&P) MODEL
DK	0.205* (0.109)	0.395** (0.017)	0.135*** (0.023)	0.262*** (0.004)	0.160* (0.021)	0.302** (0.022)
FDI	-0.095 (0.078)	-0.122** (0.006)	-0.047*** (0.008)	0.007 (0.013)	-0.076 (0.026)	-0.107* (0.017)
REM	0.054* (0.027)	0.037** (0.002)	0.006*** (0.003)	0.020** (0.001)	-0.045* (0.005)	0.052** (0.004)
ODA	0.144** (0.064)	0.043 (0.013)	0.065 (0.005)	0.092** (0.005)	0.137* (0.016)	0.083* (0.009)
MS	0.1478 (0.138)	-0.045 (0.010)	0.070** (0.023)	0.085** (0.005)	0.031 (0.011)	0.264* (0.034)
GE	-0.079 (0.178)	0.094** (0.007)	0.109*** (0.009)	0.017 (0.007)	0.181** (0.010)	-0.052 (0.023)
F(EWA)		-0.015 (0.003)				
F(PCA)			-0.102* (0.011)			
F(ECO)				-0.003** (0.000)		
F(SOC)					0.006 (0.000)	
F(M&P)						-0.037 (0.006)
C	5.764*** (0.890)	5.416*** (0.023)	5.142*** (0.054)	5.275*** (0.024)	5.228** 0.144	4.641** (0.122)

***, **, * denote significance at 1%, 5% and 10% respectively and standard error in parenthesis.

Results indicate that domestic investment has significant positive effects on the base and aggregate state fragility models, however at different levels of significance. While in the base model it was significant at 10 percent, the introduction of state fragility in second and third models improved its significance to 5 and 1 percent respectively. Similarly, capital flow remittance and development aid had positive effects on growth in the base and aggregate state fragility models. It is, however, important to note that while remittances followed the same pattern as domestic investment in these models, ODA, which was positive and significant in the base model, became insignificant in both aggregate state fragility models although it remained positive.

This, therefore, gives an insight into the ongoing debate as to the not proportionate aid-growth impact in developing countries (Doucouliagos and Paldam, 2009). FDI capital flow has a negative effect in the base and aggregate state fragility models, however at different levels of significance. While in the base model it was only negative but not significant, the introduction of state fragility in the second and third models resulted in it becoming significantly negative at 5 and 1 percent respectively. This relationship of FDI and economic growth is, however, consistent with the findings of Akinlo (2004), and Jawaid, and Saleem (2017).

The finding of Akinlo (2004), which in particular focused on the impact of foreign direct investment (FDI) on economic growth in Nigeria, found that FDI in Nigeria only has a positive effect on growth after a considerable lag. Akinlo argued that the explanation for this cannot be wholly dissociated from the nature of FDI in Nigeria, which is often extractive industry driven and not manufacturing driven. He posited that the extractive industry in Nigeria is not adequately linked in a manner that can appropriately propel the economy to growth and he claimed that extractive FDI, especially oil, might not be as growth enhancing as manufacturing FDI. The failure of the country to attract the right type of FDI can however not be dissociated from the presence of state fragility, which explains the significance levels in the face of state fragility.

Additional variables of money supply and government expenditure were introduced into the model to capture the monetary and fiscal macroeconomic environment respectively (Nwosa and Akinbobola, 2016). The results of these present a rather interesting result. The coefficient of the money supply was positive, however insignificant in the base model. After the introduction of state fragility in the second

model, money supply became negative, although it remained insignificant. However, in the third model, it became positive as expected and significant.

In the case of government expenditure, the coefficient was negative, although insignificant in the base model. After the introduction of state fragility in the second and third models, it became positive and significant at 5 and 1 percent respectively. The coefficient for state fragility in the second model was negative as expected, although insignificant, however, in the third model, it was negative and significant at 10 percent. The constants were positively signed across the models and significant at 1 percent level of significance. The third model (F(pca) model), however, gives the best fit model that captures the overall interaction of state fragility and the economy, following from the coefficient estimates, levels of significance as well as residual diagnostics.

The state fragility dimension models present a more disaggregated set of findings. The findings help to understand in more explicit terms how various dimensions of state fragility interact with capital flows and economic growth. In the case of domestic investment, a significant positive effect was found for all disaggregated models, as seen in the aggregate models, however at different significance levels. The significance levels were 1, 10 and 5 percent's for the economic social and military and political dimensions respectively.

In the case of FDI, the introduction of the economic dimension of state fragility into the model presented a positive, however, very weak and insignificant coefficient. The other dimensions presented negative coefficients which were insignificant for the social dimension and only significant at 10 percent for the military and political dimensions.

Coefficients for other capital flows; remittances and ODA were positively signed for all growth models with fragility dimensions, at various levels of significance, except for the social dimension. While both capital flows were significant at 5 percent levels of significance in the economic dimension growth model, they were significant at 5 and 10 percent respectively in the military and political dimension growth model. For the social dimension, ODA was significant at 10 percent while remittances became negative and significant at 10 percent.

The coefficients of the additional variables, money supply and government expenditure, were positively signed, albeit at varying levels of significance except for government expenditure which was insignificant in the economic state fragility dimension model and negative, but insignificant as well in the military and political dimension model. As for money supply, it was only insignificant but still positive in the social dimension.

The coefficient of the economic dimensions of state fragility for economic growth was negatively signed in line with the aggregate state fragility-growth relationship and significant at 5 percent. In the same vein all the capital flows were positively signed and significant at 5 percent, except for FDI which, although positive, was insignificant. Issues captured in this dimension of state fragility included oil and its attendant revenue, inflation as well as human capital.

More interestingly, variables that make up this dimension such as human capital have been used by previous studies such as Olson et.al (1998) and Jalilian et.al (2007) as proxy for regulation level, and they found strong causal link with economic performance. In the case of fragile states the low levels of such proxies such as human capital, which is a major characteristic of these countries, therefore explain the negative relationship.

For the case of the implications of social dimensions of state fragility for capital flows and economic growth, while there is no direct negative relationship between itself and growth, the behaviour of capital flows in its model is somewhat interesting. The coefficients of all capital flows were mostly negative except for ODA, which was positive and significant at 10 percent. As for FDI and remittances, they both were negative and were insignificant and significant at 10 percent respectively. This, therefore, provides some very intriguing insights, as issues captured in this dimension include ethnicity, youth bulge and religion. It can be deduced that the interplay going on in this dimension of state fragility, remains very potent in undermining the positive contribution of capitals flows to economic growth in Nigeria. The coefficients of the results of the economic growth models with disaggregated dimensions of state fragility generally reflected weaker performance in the military and political dimension of state fragility in Nigeria. In the long run, while it appears that the negative impact of the military and political dimension of state fragility on economic growth in Nigeria is insignificant, its ability to render FDI and government expenditure negative, as witnessed in the base model, albeit insignificant in the case of government expenditure makes it a germane issue. It is, however, crucial to note that this dimension of state fragility captures issues relating to form of governance, terrorism incidence and security.

5.4.4 Short run Dynamics

Having estimated the long run co-integration models, an investigation into the short run dynamics within the ARDL framework was carried out. The lagged value of all variables (a linear combination is denoted by the error-correction term $ECMt-1$) is retained in the ARDL model. The error correction term indicates the speed of adjustment to adjust to equilibrium in the dynamic model. The ECM coefficient shows

how quickly variables converge to equilibrium. It is expected to be negatively signed and significant. Bannerjee et al. (1998) noted that an error correction term with high significance levels further confirms the existence of a long-run relationship that is stable. Table 5.7 below shows that the expected negative signs of ECM are highly significant. This, therefore, also confirms the existence of the co-integration relationship among the variables in the models. The coefficient of $ECMt-1$ are -0.316***, -1.493** and -0.480*** for the base model and aggregate state fragility models at 1, 5 and 1 percent levels of significance respectively. In the case of the disaggregated dimensions of our state fragility models; economic, social and military and political dimensions, the coefficients of $ECMt-1$ are -0.138**, -0.305*** and -0.789** at 5, 1 and 5 percent levels of significance respectively. These findings suggest a slow adjustment speed in the base model, however a faster speed after the inclusion of state fragility and its dimensions in the respective models.

Table 5.7: Short-Run Estimates of the Impact of State Fragility on Capital Flows and Economic Growth

Regressors	BASE MODEL	F(EWA) MODEL	F(PCA) MODEL	F(ECO) MODEL	F(SOC) MODEL	F(M&P) MODEL
D(DK)	0.071 [*] (0.039)	2.913 ^{**} (0.121)	0.192 ^{***} (0.021)	0.273 ^{**} (0.008)	-0.045 [*] (0.005)	-0.362 [*] (0.028)
D(FDI)	-0.042 [*] (0.021)	0.480 ^{**} (0.023)	-0.197 ^{***} (0.014)	0.311 ^{**} (0.010)	-0.146 ^{***} (0.002)	-0.072 [*] (0.008)
D(REM)	0.013 (0.021)	-0.231 ^{**} (0.011)	-0.026 ^{**} (0.010)	-0.095 ^{**} (0.005)	0.080 ^{**} (0.002)	0.339 ^{**} (0.016)
D(REM(-1))	-0.041 ^{**} (0.016)	-1.300 ^{**} (0.054)	-0.228 ^{***} (0.015)	-0.831 ^{**} (0.020)	0.157 ^{**} (0.003)	0.517 ^{**} (0.029)
D(REM(-2))	-0.029 [*] (0.017)	-0.442 ^{**} (0.019)	-0.185 ^{***} (0.013)	-0.493 ^{**} 0.011	0.0631 ^{**} (0.002)	0.159 [*] (0.016)
D(ODA)	0.034 (0.024)	-0.713 ^{**} (0.033)	0.131 ^{***} (0.014)	0.524 ^{**} (0.014)	0.039 ^{**} (0.002)	-0.437 ^{**} (0.024)
D(MS)	0.015 (0.056)	-0.843 ^{**} (0.039)	0.036 (0.022)	0.696 ^{**} (0.023)	-0.110 ^{**} (0.004)	-1.515 ^{**} (0.082)
D(GE)	0.080 [*] (0.042)	1.202 ^{**} (0.048)	0.836 ^{***} (0.050)	0.602 ^{**} (0.013)	0.155 ^{**} (0.003)	0.886 ^{**} (0.045)
CointEq(-1)	-0.316^{***} (0.108)	-1.493^{**} (0.626)	-0.480^{***} (0.325)	-0.138^{**} (0.337)	-0.305^{***} (0.035)	-0.789^{**} (0.415)
D(Y(-1))		24.098 [*] * (1.002)	2.628 ^{***} (0.199)	7.856 ^{**} (0.199)	1.030 ^{**} (0.021)	-7.504 ^{**} (0.411)
D(Y(-2))		18.436 [*] * (0.766)	1.604 ^{***} (0.113)	4.445 ^{**} (0.111)	0.273 ^{**} (0.017)	-2.927 ^{**} (0.174)
D(DK(-1))		-2.038 ^{**} (0.087)	-0.436 ^{***} (0.032)	-2.109 ^{**} (0.051)	-0.174 ^{**} (0.004)	1.041 ^{**} (0.058)
D(DK(-2))		-1.998 ^{**} (0.081)		-1.349 ^{**} (0.036)	-0.089 ^{**} (0.003)	0.416 ^{**} (0.031)
D(FDI(-1))		1.683 ^{**} (0.071)	0.071 ^{***} (0.012)	0.099 ^{**} (0.009)	0.054 ^{**} (0.003)	-0.597 ^{**} (0.032)
D(FDI(-2))		0.561 ^{**} (0.024)	0.216 ^{***} (0.016)	-0.250 ^{**} (0.008)	0.019 [*] (0.002)	-0.205 ^{**} (0.014)
D(ODA(-1))		-0.611 ^{**} (0.025)		-0.142 ^{**} (0.005)	-0.218 ^{***} (0.004)	0.031 (0.008)
D(ODA(-2))		-0.232 ^{**} (0.013)		0.150 ^{**} (0.004)	-0.189 ^{**} (0.003)	-0.167 ^{**} (0.013)
D(MS(-1))		0.328 ^{**} (0.019)	-0.122 ^{***} (0.020)	-0.158 ^{**} (0.009)	-0.208 ^{**} (0.004)	-0.283 ^{**} (0.022)
D(MS(-2))		0.024 (0.011)	0.189 ^{***} (0.023)	0.490 ^{**} (0.013)	-0.085 ^{**} (0.004)	-0.149 [*] (0.020)
D(GE(-1))		0.677 ^{**} (0.031)	0.364 ^{***} (0.032)	0.757 ^{**} (0.0195)	-0.281 ^{**} (0.005)	0.457 ^{**} (0.030)
D(GE(-2))		0.769 ^{**} (0.031)	0.176 ^{***} (0.022)	0.280 ^{**} (0.009)	-0.003 ^{**} (0.003)	0.198 [*] (0.021)

D(F(EWA))		0.093** (0.003)				
D(F(EWA)(-1))		0.322** (0.013)				
D(F(EWA)(-2))		0.046** (0.002)				
D(F(PCA))			0.527*** (0.035)			
D(F(PCA)(-1))			-0.045*** (0.009)			
D(F(ECO))				-0.014** (0.000)		
D(F(ECO)(-1))				-0.005** (0.000)		
D(F(ECO)(-2))				-0.001 (0.000)		
D(F(SOC))					0.021** (0.000)	
D(F(SOC)(-1))					0.001 (0.000)	
D(F(SOC)(-2))					-0.055*** (0.001)	
D(F(M&P))						0.019 (0.003)
D(F(M&P)(-1))						-0.197** (0.010)
D(F(M&P)(-2))						-0.085** (0.005)

***, **, * denote significance at 1%, 5% and 10% respectively and standard error in parenthesis.

5.4.5 Model Diagnostics

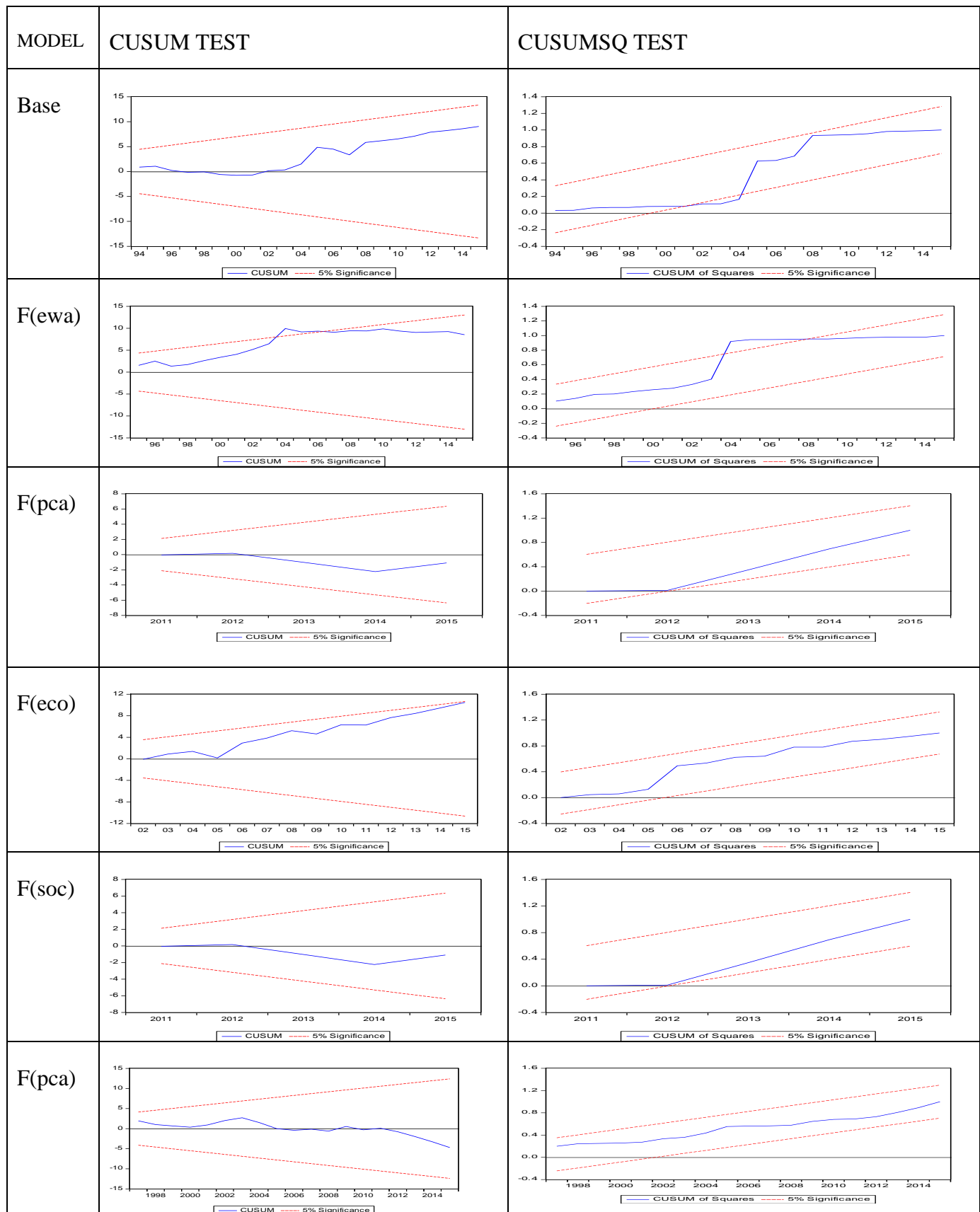
To investigate the robustness of the estimated models, some diagnostics tests were conducted such as a serial correlation test, heteroscedasticity test as well as a stability test. The serial correlation test for all models suggested the absence of serial correlation in the residuals as the Fstats were not significant in all models as depicted in Table 5.8 below. In other words, it can be said that the errors are normally distributed and can be useful for inference making (Nwachukwu and Egwaikhide, 2007).

Table 5.8: Diagnostic Tests on the Impact of State Fragility on Capital Flows and Economic Growth

	BASE MODEL	F(EWA) MODEL	F(PCA) MODEL	F(ECO) MODEL	F(SOC) MODEL	F(M&P) MODEL
Serial Correlation						
F	1.555 (0.235)	7.620 (0.221)	4.614 (0.183)	8.497 (0.184)	5.641 (0.154)	6.144 (0.220)
LM	6.792 (0.078)	29.172 (0.000)	28.833 (0.000)	17.784 (0.001)	23.833 (0.000)	25.330 (0.000)
Normality	10.794 (0.005)	2.087 (0.035)	4.950 (0.084)	17.754 (0.000)	25.933 (0.000)	5.564 (0.062)
Heteroscedasticity (ARCH)	0.253 (0.858)	0.861 (0.474)	1.189 (0.334)	4.577 (0.041)	0.830 (0.369)	4.981 (0.033)
	0.851 (0.837)	2.711 (0.438)	3.618 (0.306)	4.236 (0.040)	0.862 (0.353)	4.557 (0.033)

Stability tests were conducted for all the models. Results, from the Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) help in analysing the stability of the long run relationships and short-run dynamics. The stability of the regression can be evaluated by stability tests, and they can show whether or not the regression equation is stable over time (Pearsan et al., 2001). The null hypothesis here is that the coefficient vector remains same in all periods (Bahmani-Oskooee, and Ng, 2002). CUSUM and CUSUMSQ statistics are plotted against the critical bound of 5% significance. According to Bahmani-Oskooee, and Ng, 2002), if the plot of these statistics remains within the critical bound of the 5 percent significance level, the null hypothesis (i.e. all coefficients in the error correction model are stable) cannot be rejected. The plot of the cumulative sum of recursive residual is presented in figure 5.1 below.

Figure 5.1: Plots of CUSUM and CUSUMSQ TESTS



As shown, the plot of CUSUM residuals for the Base model was within the boundaries; however, it slightly exceeded its boundaries in the CUSUMSQ residuals. The F (ewa) model exceeded its CUSUM and CUSUMSQ plots, suggesting some form of instability in the model. Upon the introduction of the F(pca) the performance of the residuals generally improved, indicating improved stability in the model and therefore validates the use of the PCA in measuring state fragility. This result can be explained in that the introduction of the F(pca) helped to explain the residual in the base model better. The CUSUM and CUSUMSQ plots for the disaggregated fragility models F (eco, soc and m&p) were all within the boundaries. That is to say that the stability of the parameters has remained within its critical bounds of parameter stability. It is clear from both the plots that both the CUSUM and CUSUMSQ tests confirm the stability of the F(pca) model to explain the aggregate relationship between the economy and state fragility in Nigeria. Furthermore the result from the F(pca) model also presents coefficients that were more statistically significant.

5.5 Further Discussions

Growth and development of fragile states as well as progress in resilience building in fragile states remain a crucial priority for the international development community as well as the fragile states themselves. Indeed fragile states do represent a quite diverse group of economies. This group consists of very low income to, in recent times, middle-income countries. Therefore, the economic implications of state fragility for growth remain cloudy. At the very least, the recent upgrade of some fragile states from low income to middle income albeit (lower) has revealed that perhaps state fragility does not necessarily mean low income.

Early empirical investigations into the relationship between growth and state fragility have provided contrary opinions as to whether state fragility necessarily implies low

income or poor economic performances. While their findings have not necessarily suggested positive relationships, the robustness of negative relationships has equally not been strong enough to conclude for a negative relationship. For example, Bertocchi and Guerzoni (2010), in a model trying to explain state fragility determinants in sub-Saharan Africa, argued that economic determinants such as per capita GDP growth and investment did not have any significant relationship with state fragility in their panel data set. Kaplan (2015) argued further that perhaps growth has a way in which it clouds up fragility, giving an erroneous external perception of such economies. Although in this study, a negative relationship has been found between growth and our measures of state fragility, the level of significance has not been very robust. This is however consistent with the seminal findings of Bertocchi and Guerzoni (2010) who posit that the income level of fragile state economies or its growth rate, as well as investment (domestic) levels, do not necessarily have a robust relationship with state fragility. They argued that, in some cases, this relationship can even run in a positive direction as seen in the short run findings of this study.

In the case of capital flows, it is worth mentioning that this study found no significant long-run positive impact of FDI on growth. The presence of state fragility makes it more significantly negative. Recent periods have seen an emerging plethora of similar findings in African economies as well as some other developing economies. For example, Herzer and Klasen (2008) argued that the acclaimed FDI-led growth hypothesis is non-existent in the long run. Klobodu and Adams (2016), using the case of Ghana, found a negative relationship between FDI and growth. Jawaid and Saleem (2017) found a similar result for Pakistan as well as Akinlo (2004) for Nigeria. Adams (2009) argued that domestic capital remains more relevant for

growth promotion in sub-Saharan African than FDI. He argued the possibility that FDI may crowd out domestic capital, concluding that the augmentation of domestic capital with FDI has at least not been effective.

As noted by Hansen and Giorgioni (2007), in the Solow (1956) type neoclassical models, the impact of FDI on the growth rate of output is constrained by the diminishing returns of physical capital. Therefore, FDI could only be expected to exert a level effect on the output per capita, but not a rate effect. In other words, FDI could not alter the growth rate of output in the long run (Bengoa and Sanchez-Robles 2003). This thesis utilised output per capita. Hansen and Giorgioni (2007) highlighted the seminal contributions by Baran, (1957), Dos Santos (1970) and Chase-Dunn, (1975) that FDI inflows may have had negative effects on growth of the recipient economy if these inflows resulted in substantial outflows of profits and dividends and/or if the vehicles of FDI, the multinational corporations (MNCs), obtained substantial concessions from the host country.

Hansen and Giorgioni (2007) however noted that recent new economic growth theory suggest that FDI can affect not only the level of output per capita (as in the neo-classical models) but also its rate of (long-run) growth. It becomes apparent that the impact of FDI on the economy is expected to be dependent upon some characteristics of host countries, rather than being absolutely positive or negative. Adelman and Morris (1967) argued that (to benefit from FDI) governments had to maintain a certain degree of macroeconomic stability, to promote domestic and foreign competition for socioeconomic development. In particular, some studies suggest that FDI contributes to growth only if host countries meet some conditions such as human capital development and financial market development (Hansen and Giorgioni, 2007). Kherfi and Soliman (2005) examined the effectiveness of foreign

direct investment on growth in Central and Eastern Europe (CEE) and the Middle East and North Africa (MENA) regions finding that FDI affects growth positively only in the European Union accession countries of the CEE region, while the effect of FDI on growth in MENA is either insignificant or negative. They concluded that the magnitude of the FDI effect depends on host country conditions. These conditions include macroeconomic stability and institutional strength, the absence of which characterises fragile states. Oliva and Rivera-Batiz (2002) suggest that the concepts of growth policies and foreign investment promotion should be expanded to include the quality of government. They find evidence that, institutions, as expressed by the quality of the democratic regime and the rule of law, matter in making FDI favourable for growth. They conclude that institution quality is of substantial importance in attracting FDI and in creating a favourable environment for FDI to contribute to growth.

In the context of fragile states, the argument has been that, theoretically, these economies do not present attractive inward FDI scenarios, and FDI to these economies has been mainly resource-driven, particularly in Nigeria (Hangal and Pagel, 2012). They argued that countries like Djibouti, Chad, Niger and Uganda have witnessed an inverse relationship between their stability and FDI received. They explained that resource seeking FDI thrives more in the absence of resilience and stability. They claimed that perhaps, FDI to this sector has a way of stimulating state fragility. They concluded that this FDI type has other consequences which, as suggested by the literature, include an inverse relationship with economic performance and they recommended diversification of the economy which, as they had previously alluded to, has difficulty in such fragile states.

In the case of other capital flows (remittances and ODA) the study found a positive relationship with growth in the long run for all models, but mixed findings in the short run. In the case of remittances, the presence of state fragility makes it more significant for economic growth. In the case of ODA state fragility renders it less significant for economic growth. Previous studies such as Choong et al. (2010), Wamboye, et al. (2014), and Odusanya, et al. (2011) have found positive association between aid and economic growth, while findings such as Klobodu and Adams (2016) and Kodama (2012) have found a negative relationship. However, Moyo (2009) has provided a detailed explanation as to why aid may not always be significant for economic growth in Africa, linking it to a cycle of corruption trap, which in itself is a strong characteristic of state fragility.

In a recent report, the Commission on State Fragility, Growth and Development (2018), argued for the use of ODA to support domestic investment for job creation as the most productive and effective way donors can help to drive growth in fragile states. They argued first of all that the issue of conditionality has to be relaxed for fragile states and then ODA should be channelled to the private sector, alluding to the capacity of domestic investors to be most effective in understanding domestic challenges and how to optimise the situation. The report stressed that rapid expansion of productive jobs gradually stabilises such a society. Such jobs are created primarily by the private sector: modern firms harness economies of scale and specialisation by organising workers into teams. In fragile states, there are very few such firms, and so the typical person currently works independently. Consequently, people are stuck in low productivity jobs, and hence poverty. Fragile states have few modern firms because they exist only where they can thrive: the

risks currently outweigh the likely rewards. But without firms, societies will remain fragile.

Fortunately, ODA can be used to break this trap, by changing the balance between risk and reward. The report highlights that typically, firms in fragile environments face four major negatives. First, the economic infrastructure is inadequate, providing neither the electricity nor connectivity to markets that firms need in order to function. Aid can directly finance the necessary infrastructure projects. Secondly, the regulatory environment is hostile. Aid can finance the technical advice that assists governments in regulatory reform. Thirdly, while in fragile states the economy is typically rudimentary, with many possible activities lacking proper firms, there is a first-mover disadvantage in pioneering activities, so they remain neglected. Aid can be channelled through DFIs to offset this disadvantage. Finally, fragility poses an existential risk that is beyond the power of the government to remove or offset. ODA can finance the political risk cover that addresses these fears. Perhaps, it suffices to argue that flows that have much to do with states or governments in fragile states are often not as productive for economic growth.

In the case of remittances, the significance in the face of state fragility can be linked to what Lum et al. (2013) called the result of "*fungibility*". They argued that governments may become relaxed in ensuring the mobilisation of public resources because private finances are filling in gaps where public services would otherwise be offered. However, they argued alternatively, that remittances might undermine a government's capacity if the money is used to fund violent activities or support opposition groups and thereby make the country more fragile. Nielsen, and Riddle, (2009) noted that another significant (and resilient) form of finance in fragile and conflict-affected countries comes from the diaspora, which represents key actors in

all phases of state fragility. Although much of the remittance flows go to support current consumption, many of these countries turn to their diaspora for much-needed investment capital. The funds of the diaspora are often significant. Fragile states often have large Diasporas that remit funds to family members, suggesting that remittances may tend to be large relative to GDP in such states. In addition, the poor quality of social and political institutions in these countries may affect how remittances affect the economies of these nations (Chami et.al, 2018).

5.6 Conclusion

In conclusion, this chapter investigates the role of state fragility on the relationship between capital flows and economic growth in Nigeria. The study utilised a stepwise approach to examine this relationship using the ARDL estimation technique. From the estimates generated, the study found that there is a significant long-run relationship between capital flows and economic growth. The study found that remittances remain a crucial form of capital inflow to Nigeria and that the presence of state fragility makes it even more significant. The study also found that development aid contributes positively to economic growth. However, the presence of state fragility renders it insignificant. In the case of FDI, the study found a negative relationship between it and the economy albeit insignificant. However, the presence of state fragility makes it significant but still negative. The study found a direct negative relationship between state fragility and output per capita, however it was not very significant. It also found a more significant negative indirect relationship between state fragility and output per capita particularly through the way it alters the contribution of potential growth drivers such as capital flows. The study, therefore, concludes that, while the issue of state fragility needs to be addressed and concerted efforts put into building state resilience, not necessarily just for the direct

adverse impact of state fragility for economic growth, but, also, its impact through other channels such as capital flows.

CHAPTER 6: IMPACT OF STATE FRAGILITY ON CAPITAL INFLOWS AND ECONOMIC GROWTH IN NIGERIA: CONCLUSION

This chapter presents the main findings of the study and their implications as it addresses the questions raised to achieve the core objective of the study. It also presents the summary and conclusions of the study and highlights the limitations.

6.1 Introduction

Fragile states pose a dilemma for the development community at research, policy and practice levels. These countries present not only some of the most severe and urgent development needs in the world, but also the most difficult environments for conventional economic theories and assumptions. However recent periods have witnessed growth in a significant number of these countries. This raises the issue of what drives the witnessed growth, and whether the manifestations of state fragility have implications for growth in a fragile state. Interestingly, quite a lot of the existing empirical studies on economic growth tend to ignore state fragility. This study, therefore, seeks to understand the significance of state fragility for capital flows and economic growth, using Nigeria as a case. The study utilised econometric analysis techniques in addressing the research questions highlighted to achieve the core objective of the study. The key findings of the study are presented below.

6.2 Findings and Implications of the Study

To achieve the objective of this study, which involves investigating the implications of state fragility for the economy of a fragile state like Nigeria, the study had first to conceptualise state fragility. This was done by reviewing seminal works on the concept of state fragility. It is crucial to note that, while the concept of state fragility remains an evolving one, far less has been done on it with regard to economic analysis and implications.

This study has identified various forms of the dimensions of state fragility and ongoing arguments on the fragility concept. It went further to highlight the consensus on the multidimensional approach adopted in dealing with state fragility and found that state fragility is perceived as “context”. The various definitions of state fragility perceive it as a multidimensional phenomenon, so the use of a univariate approach to quantification becomes inadequate. The word "multidimensional" suggests the need for a multivariate approach in quantifying fragility and renders the use of a univariate approach less appropriate.

The study went further in presenting a time series fragility index for Nigeria using methods suggested by existing literature as well as introducing a multivariate approach in the principal component analysis. From the trends observed, it becomes clear that state fragility trend in Nigeria has continued to rise, however not in a straight linear path. The upward trend in state fragility corroborates studies that have suggested the difficulty for most fragile states to build any form of resilience. In the light of the results generated from both techniques used in this study to quantify state fragility, the relevance and implications of a multivariate approach can be discussed. In recent times there have been continued calls for scholastic efforts that approach fragility from a multidimensional perspective. The multivariate approach (principal component analysis) used in this study positions it among the emerging studies that attempt to provide a multidimensional analysis to fragility, albeit from a contextual (country specific) perspective. Therefore this index is apposite as a fragility proxy for further economic analysis.

In addressing the second question posed by this study, the study investigated whether the role of state fragility matters for capital flows and economic growth in Nigeria. From the estimates generated, the study found that domestic investment

remains essential for economic growth in Nigeria, irrespective of state fragility. The study found that there is a significant long-run relationship between capital flows and economic growth. The study found that remittances are a crucial form of capital flow to Nigeria and that the presence of state fragility even makes this more significant except for in the case of social dimension of state fragility where it was negative. The study also found that ODA contributes positively to economic growth. However, the presence of state fragility renders it insignificant, although, when state fragility is disaggregated, it becomes significant. In the case of FDI, the study found a negative relationship with economic growth, albeit insignificant. However, the presence of state fragility makes it significant but still negative. FDI was only found to be positive in the economic dimension of state fragility but insignificant.

The study found a negative relationship between state fragility and the economic growth; although, it was not very significant. This, therefore, implies that policies that address the issue of state fragility need to be pursued and concerted efforts put into building state resilience, not necessarily only for the direct adverse impact of state fragility on the economic growth, but rather its impact through other channels such as capital flows. Also, policies that promote an enabling environment for domestic investment to thrive will have positive growth implications for the economy of a fragile state like Nigeria.

6.3 Summary and Conclusion of the Study

In conclusion, this study investigated the implications of state fragility for the economy of a fragile state using the case of Nigeria. The study finds that state fragility trends in Nigeria have continued to rise, however not in a straight linear path. In investigating the economic implications of state fragility, the study finds that, while state fragility remains a major developmental challenge, which has adverse direct

implications for economic growth, but more importantly, it has more significant indirect implications. These indirect implications include altering the behaviour of crucial growth drivers such as capital inflows, as seen in the case of this study.

6.4 Limitations of the Study and Direction for Future Research

Research works often have some factors militating against them. It is essential to indicate that this research also suffers from some possible limitations and challenges faced in conducting the study. This section highlights the major challenges faced in the process of conducting this study.

The original growth model used in the study included a measure of human capital in line with Jalilian et al. (2007) following Mankiw et al. (1992). However, due to issues of multicollinearity, it was dropped out of the model. Theoretically, the inclusion of a variable which is computed from a combination of various other variables in the data set as done in the case of the state fragility measure can lead to multicollinearity. In the computation of our measure of state fragility, human capital elements had been captured. Also, the VIF statistical tests suggested high VIF for our measure of human capital and state fragility. Since the primary focus of this study is to investigate the impact of state fragility on capital inflows and economic growth in Nigeria, the study dropped human capital.

Conceptually state fragility remains an evolving area of study and so is knowledge about it. Perhaps less knowledge is available for accurate quantification of it. Indeed it is a phenomenon with very qualitative dimensions; hence the plethora of definitions.

Based on commonalities of the various definitions and symptoms of fragility and dimensional categorisation of the manifestations of state fragility as proposed by the Fund for Peace (2015), this study identifies relevant variables to explain state

fragility. These variables were identified in line with Bertocchi and Guerzoni, (2012) and Fund for Peace (2015), but adapted to suit the context of Nigeria. However, the selected variables focused on quantifiable symptoms and manifestations with the most economic relevance, not necessarily causes, symptoms and consequences as proposed by Besley and Pearson (2011).

For this study, based on its economic nature, the variables considered to have more economic relevance, and importance were selected, bringing into context the larger theme upon which the study is based and in synchronisation with fragility determinant variables as expressed by (Bertocchi and Guerzoni, 2012).

This study acknowledges that many indices that have been constructed to capture multidimensional issues for econometric analysis are often vulnerable to other flaws such as uncaptured variables and dimensions of the issue, as noted by Kwabena and Traynor (1999) among others. Similarly, this study does not claim to have fully captured all contributory elements of state fragility in computing our measures of state fragility. However, we have selected the most quantifiable elements of the various state fragility dimensions with the most accurate and uniformly complete available data for the period of the study. However accuracy and precision remain areas that can be investigated further.

From the foregoing, the empirical results should be interpreted cautiously, as they only present an exploratory investigation into the implications of state fragility for the economy. Also, the drivers of state fragility may differ across countries as noted in chapter 3, hence the need for caution in generalisation. However, despite these caveats, the study provides apriori grounds for understanding the

economic implications of the presence of state fragility in a fragile state like Nigeria.

Cognisant of these limitations, further research could be conducted to strengthen the findings and conclusions reached on the implications of state fragility for economic performance in Nigeria as examined by this research. In particular, attempts to capture other forms of capital inflow, such as portfolio equity and debt among others which were left out in the study due to non-availability of accurate data at the time of the study, could provide a better understanding of the implications of state fragility for the economy. Similarly, access to a disaggregated form of FDI inflow into oil and non-oil FDI data will improve and perhaps provide better understanding of the negative FDI sign. Furthermore, as the scope of this research did not attempt to capture growth and income redistribution, future research could look at opportunities for further extending the analysis to capture the economic growth and income redistribution discussion. Once sufficient data are available for relevant indicators this could be another emerging debate for the fragile state and economy literature. This could provide more robust findings and hence stronger conclusions on the implications of state fragility for the economy of Nigeria. Also, future research may look at extending the analysis to other country studies of similar economic structure particularly in Sub-Saharan Africa based on their own fragility context in order to generalise the findings and policy application across the sub-region.

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APPENDIX

Appendix 1

Appendix 1.1: Remittance Flows to Fragile Economies

Country	Remittances Rank 2010	Percent of Total Remittances to FS 2010(%)	Remittances Rank 2005	Percent of Total Remittances to FS 2005 (%)
Bangladesh (O)	1	22.9	1	20.4
Nigeria (O)	2	21.1	3	15.4
Pakistan (O)	3	20.4	2	20.2
Sri Lanka (O)	4	7.6	4	8.2
Nepal (O)	5	7.3	6	5.4
Kenya (O)	6	3.6	9	3.5
Sudan (O)	7	3.0	7	4.8
Haiti (O)	8	2.8	8	4.4
Yemen (O)	9	2.5	5	5.6
West Bank and Gaza (O)	10	2.3	10	3.3
Total Percent received by top 10 remittance receipts		93.4		91.3

(O) In top 10 both Years (>) in top 10 2005-10 (<) Out of top 10 2005-10 (N) Unknown

Source: OECD, 2013 Pp.73

Appendix 1.2: FDI Flow to Fragile Economies

Country		FDI Rank 2010	Percent of Total FDI to FS 2010(%)	FDI Rank 2005	Percent of Total FDI to FS 2005(%)
Nigeria	(O)	1	21.9	1	29.8
Iran	(O)	2	13.1	2	18.8
Congo DR	(N)	3	10.7	NA	NA
Congo Rep	(O)	4	10.2	8	3.1
Sudan	(O)	5	7.5	3	13.8
Pakistan	(O)	6	7.3	4	13.2
Iraq	(O)	7	5.2	7	3.1
Niger	(>)	8	3.4	25	0.3
Bangladesh	(O)	9	3.3	5	4.9
Myanmar	(>)	10	3.3	15	1.4
Uganda	(<)	11	3.0	10	2.3
Bosnia-Herzegovina	(<)	22	0.8	6	3.6
Georgia	(<)	12	3.0	9	2.7
Total Percent received by top 10 FDI recipients			85.9		95.2

(O) In top 10 both Years (>) in top 10 2005-10 (<) Out of top 10 2005-10 (N) Unknown

Source: OECD, 2013 Pp.70

Appendix 1.3: ODA Flow to Fragile Economies

Country		ODA Rank (2010)	Percent of Total ODA to FS 2010 (%)	ODA Rank (2005)	Percent of Total ODA to FS 2005 (%)
Afghanistan	(O)	1	12.8	3	5.3
Ethiopia	(O)	2	7.1	4	3.6
Congo DR	(O)	3	6.8	5	3.5
Haiti	(>)	4	6.2	18	0.8
Pakistan	(O)	5	6.1	7	3.0
West Bank and Gaza	(>)	6	5.1	12	1.9
Iraq	(O)	7	4.4	1	40.9
Nigeria	(O)	8	4.1	2	11.9
Sudan	(O)	9	4.1	6	3.4
Uganda	(O)	10	3.5	10	3.2
Total percent received by top 10 ODA recipients			60.1		76.6

(O) In top 10 both Years (>) in top 10 2005-10 (<) Out of top 10 2005-10 (N) Unknown

Source: OECD, 2013 Pp.54

From Appendix 1.1 to 1.3 it can be observed that Nigeria remained a constant feature in the capital flows to fragile states. In terms of remittances receives above 22 percent of total remittances to fragile states. Nigeria has over the years continued to be leading FDI recipient in fragile state economies accounting for over 20 percent of FDI going to fragile economies. In terms of ODA accounts for only slightly above 4 percent of total ODA going to fragile states.

Appendix 3

Let $c = \begin{bmatrix} c_1 \\ c_2 \\ \vdots \\ c_n \end{bmatrix}$, and it is the vector of the n principal components,

and $A = \begin{bmatrix} \alpha_1^{(1)} & \alpha_1^{(2)} & \dots & \alpha_1^{(n)} \\ \alpha_2^{(1)} & \alpha_2^{(2)} & \dots & \alpha_2^{(n)} \\ \dots & \dots & \dots & \dots \\ \alpha_n^{(1)} & \alpha_n^{(2)} & \dots & \alpha_n^{(n)} \end{bmatrix}$ an $n \times n$ matrix, made up of vector columns

and $x = \begin{bmatrix} x_1 \\ x_2 \\ \vdots \\ x_n \end{bmatrix}$ the vector of initial n variables.

In an algebraic matrix equation, this can, therefore, be written as

$$c = A^t * x \quad (3.4)$$

Where c and α are both generic notations of principal components and a vector with elements that define a standardised linear combination, respectively.

To, therefore, determine the principal components require the maximisation of $VAR(c)$.

This is therefore done through solving for

$$\begin{cases} c = \alpha^t * x \\ \max VAR(c) \end{cases} \quad (3.5)$$

Where α is a standardised linear combination

$$\text{This then equals } \begin{cases} \max \alpha^t \sum \alpha \\ \alpha^t * \alpha = 1 \end{cases} \quad (3.6)$$

Where \sum is covariance matrix of initial variables.

Each principal components is equal to its corresponding matrix \sum eigenvalue (λ).

Given that \sum has n eigenvalues, this can, therefore, be represented as $\lambda_1 \geq \lambda_2 \geq \dots \geq \lambda_n$.

This inequality can, therefore, be rewritten as $VAR(C_1) \geq VAR(C_2) \geq \dots \geq VAR(C_n)$

The larger the amount of principal components retained will lead to a greater part of the variance captured from the initial variable space.

$$x_i = \sum_{j=1}^k a_{ij} * f_j + a_i * u_i + \varepsilon_i \quad (3.7)$$

Where: influence of common factor is explained by $\sum_{j=1}^k a_{ij} * f_j$ e

influence of Individual factor is explained by $a_i * u_i$

and influence of residual factor is explained by ε_i

Therefore, the initial variable variance is:

$$VAR(x_1) = Communality + Individuality x_1 + Residuality x_1 \quad (3.8)$$

Going further, according to Armeanu and Lache (2008), individuality and residuality are often difficult to separate, as they both form the specific uniqueness of each initial variable variance and this can, therefore, be expressed as:

$$Specificity x_1 = Individuality x_1 + Residuality x_1 \quad (3.9)$$

$$\text{Therefore } Var(x_1) = Communality + Specificity x_1 \quad (3.10)$$

Appendix 3.1: A comprehensive overview of selected definitions of state fragility as used by major institutions within the donor community

Institution	Concept	Definition
World Bank (WB)	Fragile states Fragile and conflict affected situations (FCS)	<p>The World Bank adopted the term fragile states “in the interests of harmonization” (WB, 2005: 1) as corresponding to their definitions of Low Income Countries Under Stress (LICUS). “The Bank identifies fragile states by weak performance on the Country Policy and Institutional Assessment (CPIA). They share a common fragility, in two particular aspects:</p> <ul style="list-style-type: none"> • State policies and institutions are weak in these countries: making them vulnerable in their capacity to deliver services to their citizens, to control corruption, or to provide for sufficient voice and accountability. • They face risks of conflict and political instability. (...)” (WB, 2005: 1). <p>The CPIA considers 16 criteria, group in 4 clusters (economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions) for rating countries on a scale from 1 to 6. A country is considered fragile if its score is equal to or below 3.2.</p> <p>Fragile situations are “[p]eriods when states or institutions lack the capacity, accountability, or legitimacy to mediate relations between citizen groups and between citizens and the state, making them vulnerable to violence.” (WB, 2011: xvi) “Fragile Situations” have: either a) a harmonized average CPIA country rating of 3.2 or less, or b) the presence of a UN and/or regional peace-keeping or peace-building mission during the past three years. (WB, 2013)</p>
Asian Development Bank (ADB)	Weakly performing countries (WPCs)	<p>“Many of the region’s poor people live in DMCs [developing member countries] that have weak governance, ineffective public administration and rule of law, and civil unrest. These countries have been referred to variously as WPCs, fragile states, low-income countries under stress (LICUS), and difficult partnership countries. Service delivery systems in such countries seldom function well, and the government’s ability to guarantee the basic security of its people is often limited. WPCs are more likely to experience large- scale and civil conflict than other low-income countries.” (ADB, 2007: 1)</p> <p>“While WPCs may exhibit aspects of fragility, the primary focus on weak performance is consistent with the performance-based allocation systems of ADB, African Development Bank, and the LICUS approach of the World Bank.” (ADB, 2007: 1)</p>
African Development Bank (AfDB)	Fragile states	<p>“Fragility is an imbalance between the strains and challenges (internal and external) faced by a state and society and their ability to manage them. At the extreme, fragility is expressed</p>

		as conflict or collapse of state functions. (...) Fragility is thus the opposite side of the coin to state resilience, which is the ability of the state to manage such strains through effective institutions, processes and capacities that build legitimacy and societal cohesion.” (AfDB, 2014: 2)
European Commission	Situations of fragility	“Fragility refers to weak or failing structures and to situations where the social contract is broken due to the State’s incapacity or unwillingness to deal with its basic functions, meet its obligations and responsibilities regarding service delivery, management of resources, rule of law, equitable access to power, security and safety of the populace and protection and promotion of citizens’ rights and freedoms.” (European Commission, 2007: 5)
OECD	Fragile states	“A fragile region or state has weak capacity to carry out basic governance functions, and lacks the ability to develop mutually constructive relations with society. Fragile states are also more vulnerable to internal or external shocks such as economic crises or natural disasters. More resilient states exhibit the capacity and legitimacy of governing a population and its territory. They can manage and adapt to changing social needs and expectations, shifts in elite and other political agreements, and growing institutional complexity. Fragility and resilience should be seen as shifting points along a spectrum.” (OECD, 2012)
g7+	Fragile states	“A state of fragility can be understood as a period of time during nationhood when sustainable socio-economic development requires greater emphasis on complementary peacebuilding and statebuilding activities such as building inclusive political settlements, security, justice, jobs, good management of resources, and accountable and fair service delivery.” (g7+, 2013: 1)
DFID	Fragile states	“Although most developing countries are fragile in some ways, DFID’s working definition of fragile states covers those where the government cannot or will not deliver core functions to the majority of its people, including the poor. The most important functions of the state for poverty reduction are territorial control, safety and security, capacity to manage public resources, delivery of basic services, and the ability to protect and support the ways in which the poorest people sustain themselves. DFID does not limit its definition of fragile states to those affected by conflict.” (DFID, 2005: 7) More recently, the expression Fragile and Conflict Affected States (FCAS) has also been used.
USAID	Fragile states	“USAID uses the term <i>fragile states</i> to refer generally to a broad range of failing, failed, and recovering states. However, the distinction among them is not always clear in practice, as fragile states rarely travel a predictable path of failure and

		<p>recovery, and the labels may mask substate and regional conditions (insurgencies, factions, etc.) that may be important factors in conflict and fragility. It is more important to understand how far and quickly a country is moving from or toward stability than it is to categorize a state as failed or not. <i>Therefore, the strategy distinguishes between fragile states that are vulnerable from those that are already in crisis.</i></p> <p>USAID is using <i>vulnerable</i> to refer to those states unable or unwilling to adequately assure the provision of security and basic services to significant portions of their populations and where the legitimacy of the government is in question. This includes states that are failing or recovering from crisis.</p> <p>USAID is using <i>crisis</i> to refer to those states where the central government does not exert effective control over its own territory or is unable or unwilling to assure the provision of vital services to significant parts of its territory, where legitimacy of the government is weak or nonexistent, and where violent conflict is a reality or a great risk.” (USAID, 2005: 1).</p>
Canadian International Development Agency (CIDA)	Fragile states	<p>“According to CIFP’s [Country Indicators for Foreign Policy] conceptualization, the state is the primary unit of analysis and needs to exhibit the three fundamental properties of authority, legitimacy and capacity (ALC) to function properly (or to use the World Bank’s language – security, justice and jobs). Fragility measures the extent to which the actual characteristics of a state differ from their ideal situation; states are constrained by both internal and external forces that are constantly changing over time. Consequently, all states are, to some extent, fragile; weakness in one or more of the ALC dimensions will negatively impact the fragility of a particular country. In that sense, we need to consider not only the extreme cases of failing, failed and collapsed states but also the ones that have the potential to fail.” (Carment and Samy, 2012: 4).</p>

Notes: See Box 1 in Cammack et al (2006: 17) for a more comprehensive list of working definitions of fragile states used by donor organisations.

Source: **Ferreira, I A R** (2015). Defining &Measuring State Fragility: A New Proposal. The Annual Bank Conference on Africa. Berkeley, CA

http://cega.berkeley.edu/assets/miscellaneous_files/109_-

[ABCA 2015 Ines Ferreira Defining and measuring state fragility A new proposal May15.pdf](#)

Appendix 3.2: Income Level Classification of Fragile State Economies

Low-income States	Fragile	Middle-income fragile States	
		Lower Middle Income	Upper Middle Income
Afghanistan		Cameroon	Angola
Bangladesh		Congo. Rep	Bosnia and Herzegovina
Burundi		Cote d'Ivoire	Iran. Islamic Rep.
Central African Republic		Georgia	
Chad		Iraq	
Comoros		Kiribati	
Congo. Dem. Rep		Kosovo	
Eritrea		Marshall Islands	
Ethiopia		Micronesia, Fed. Sts.	
Guinea		Nigeria	
Guinea-Bissau		Pakistan	
Haiti		Solomon Islands	
Kenya		South Sudan	
Korea, Dem. Rep		Sri Lanka	
Kyrgyz Republic		Sudan	
Liberia		Timor-Leste	
Malawi		West Bank and Gaza	
Myanmar		Yemen Rep	
Nepal			
Niger			
Rwanda			
Sierra Leone			
Somalia			
Togo			
Uganda			
Zimbabwe			

Source: OECD, 2013, p.19

Appendix 3.3: A Comprehensive Overview of Measures and Method Used in the Construction of Existing Fragility Indices

Index	Institution (Reference)	Purpose	Scale	Indicators	Methodology	Application
CIFP Fragility Index	Carleton University (Carment and Samy, 2012; CIFP website, 2015)	The CIFP is a robust assessment tool which assesses state performance along each of the three dimensions of statehood (authority, legitimacy, and capacity).	1-9 (low fragility to high fragility)	More than 70 indicators, representing performance measures along several dimensions: governance, economics, security and crime, human development, demography, and environment.	During the first level of analysis, structural indicators are grouped into six clusters corresponding to each dimension, and a composite index for country performance along those dimensions is constructed. The results for each country are then averaged in each subject cluster (ALC).	Countries have scores for the different components of the ALC approach and an overall score. Overall fragility scores above 6.5 are considered serious.
Country Policy and Institutional Assessment (CPIA)	World Bank (WB, 2011)	The goal is to assess the quality of a country's present policy and institutional framework, in terms of how conducive it is to fostering poverty reduction, sustainable growth, and the effective use of development assistance.	1-6 (low to high)	16 criteria related to economic management, structural policies, policies for social inclusion/equity, and public sector management and institutions.	The CPIA criteria include the indicators for the four clusters. For each criterion, countries are rated on a scale of 1 (low) to 6 (high). The rating process includes: i) a benchmarking phase, during which there is the rating of a small but representative sample of countries selected from all regions; and ii) a second phase, during which the remaining countries are rated using the scores from the	Fragile states are countries with a CPIA score of 3.2 or less.

					benchmark countries as guideposts. Each of the four clusters weighs 25% of the overall score.	
Fragile states index (FSI)	Fund for Peace; Foreign Policy journal (Fund for Peace and	It allows the identification of, not only the normal pressures that all states experience, but also when those pressures are pushing the state towards the edge of failure. It enables political risk assessment and early warning of conflict.	1-120	12 key political, military, social and economic indicators (and more than 100 sub-indicators).	The Conflict Assessment Software Tool (CAST) is used to attribute a score to each indicator representing the significance of the various pressures to each country with. The overall assessment is a result of a triangulation of these results, quantitative analysis and a qualitative examination of the major events in the countries.	In the report countries are categorized by score quartiles: alert (90-120), warning (60-90), stable (30-60), and
Index of state weakness in the developing world (ISW)	Brookings Institution (Rice and Patrick, 2008)	It allows the identification of potential patterns of state weakness, either within geographical regions or across functional areas by capturing state performance across its four areas of responsibility: economic, political, security and welfare.	0-10	Index of state weakness in the developing world (ISW)	Brookings Institution (Rice and Patrick, 2008)	It allows the identification of potential patterns of state weakness, either within geographical regions or across functional areas by capturing state performance across its four areas of responsibility: economic, political, security and welfare.
State fragility index (SFI)	George Mason University (Marshall and	It is a measure of fragility in a country, which is closely associated with the state capacity to manage conflict,	0-25 (no fragility to	State fragility index (SFI)	George Mason University (Marshall and Goldstone, 2007; Marshall and Cole, 2014)	It is a measure of fragility in a country, which is closely associated with the state capacity to

	Goldstone, 2007; Marshall and Cole, 2014)	make and implement public policy, and deliver essential services, and its systemic resilience in maintaining system coherence, cohesion, and quality of life, providing and effective response to challenges and crisis, and sustaining progressive development.	extreme fragility)			manage conflict, make and implement public policy, and deliver essential services, and its systemic resilience in maintaining system coherence, cohesion, and quality of life, providing and effective response to challenges and crisis, and sustaining progressive development.
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Notes: Gutierrez et al. (2011), Fabra Mata and Ziaja (2009) and Ziaja (2012) provide more extensive and complete accounts of the existing indices.

Source: **Ferreira, I A R** (2015). Defining & Measuring State Fragility: A New Proposal. The Annual Bank Conference on Africa. Berkeley, CA

http://cega.berkeley.edu/assets/miscellaneous_files/109_-

[ABCA 2015 Ines Ferreira Defining and measuring state fragility A new proposal May15.pd](#)

Appendix 3.4: A Comprehensive Overview of Attributes, Aggregation Methods Indicator Weights Used to Construct Existing Fragility Indices

Index	Attributes and aggregation method	Number of Indicators	Weight per indicator
BTI Weak Stateness Index	(Monopoly of Violence + Basic Administration) / 2	2	0.500
CIFP Fragility Index	(Governance [12] + Economics [24] + Security & Crime [10] + Human Development [17] + Demography [10] + Environment [10]) / 6	83	0.007-0.019
Failed State Index	(Mounting Demographic Pressures + Massive Movement of Refugees or Internally Displaced Persons creating Complex Humanitarian Emergencies + Legacy of Vengeance-Seeking Group Grievance or Group Paranoia + Chronic and Sustained Human Flight + Uneven Economic Development along Group Lines + Sharp and/or Severe Economic Decline + Criminalization and/or Delegitimization of the State + Progressive Deterioration of Public Services + Suspension or Arbitrary Application of the Rule of Law and Widespread Violation of Human Rights + Security Apparatus Operates as a "State Within a State" + Rise of Factionalized Elites + Intervention of Other States or External Political Actors) / 12	12	0.083
IDA Resource Allocation Index	(Economic Management [3] + Structural Policies [3] + Policies for Social Inclusion/Equity [5] + Public Sector Management and Institutions [5]) / 4	16	0.050-0.083
Index of State Weakness	(Economic Basket [5] + Political Basket [5] + Security Basket [5] + Social Basket [5]) / 4	20	0.050
PCIL Risk Ratio	No attributes specified. The index uses a logistic regression model to produce country scores. As variables, it uses Regime Consistency, Infant Mortality, Economic Openness, Militarization, Neighborhood War and dummy variables for Autocracy and Partial Democracy.	7	Not determined
Political Instability Index	(Underlying Vulnerability [12] + Economic Distress [3]) / 2 Three indicators have a weight of two.	15	0.038-0.200
State Fragility Index	Effectiveness score + Legitimacy score =(Security Effectiveness [1] + Political Effectiveness [3] + Economic Effectiveness [2] + Social Effectiveness [1]) + (Security Legitimacy [1] + Political Legitimacy [4] + Economic Legitimacy [1] + Social Legitimacy [1])	14	0.031-0.125
WGI Political Stability Indicator	No attributes specified. The index uses an unobserved components model which weights each indicator according to its correlation with the other indicators. ³³	35	0.010-0.094

³³ Table refers to the 2008 editions of indices; exceptions: CIFP Fragility Index (2007) and Political Instability Index (2009/10). The figures in brackets show the number of indicators used to measure each attribute. If the number of indicators used is one for all attributes, the bracket is omitted. The weight per indicator can vary, even if no explicit weighting scheme is applied, when differently sized categories lead to different impacts of individual indicators on the overall index score. The Failed States Index also draws on at least four structural indicators and calibrates scores by expert judgement. The exact design and impact of these components is not published. PCIL risk ratio: Since the index does not standardize the indicators, the modelled weights cannot be calculated. According to the author, regime consistency has the strongest and militarization the lowest impact (personal communication). The WGI Political Stability index uses 35 indicators from 13 sources in the year 2008. The six Worldwide Governance Indicators jointly use many more indicators from 35 sources. These are weights provided by the index authors (World Bank 2009b). Source: Ziaja, S., (2012). What do fragility indices measure? *Zeitschrift für Vergleichende Politikwissenschaft*, pp.1-26.

Appendix 3.5: Preliminary statistics

	OR	R	YB	INF	TR	G	E	SE	S
Mean	4.312	1.087	3.972	2.683	2.597	0.597	5.545	3.370	2.603
Median	4.305	1.099	3.978	2.503	2.303	1.000	5.544	3.286	2.564
Maximum	4.485	1.099	3.993	4.288	6.620	1.000	5.545	3.896	3.232
Minimum	4.016	0.693	3.947	1.683	0.000	0.000	5.541	2.819	2.229
Std. Dev.	0.101	0.068	0.016	0.731	1.929	0.495	0.000	0.275	0.265
Obs	36	36	36	36	36	36	36	36	36

Appendix 3.6: Kaiser's Measure of Sampling Adequacy

	MSA
OR	0.872
R	0.742
YB	0.979
INF	0.766
TR	0.954
G	0.760
E	0.842
SE	0.838
S	0.954
Kaiser's MSA	0.856

Appendix 3.7: Maximum Absolute Correlations

	MAC
OR	0.552
R	1.000
YB	0.766
INF	0.501
TR	0.855
G	0.702
E	1.000
SE	0.855
S	0.733
Overall	1.000

Appendix 3.8: Principal Component (Eigen Vectors)

Variable	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6	PC 7	PC 8	PC 9
OR	-0.039	0.300	0.790	-0.367	0.005	-0.307	0.217	-0.095	0.001
R	0.127	0.636	-0.158	-0.027	0.063	0.209	0.003	0.075	0.707
YB	0.431	-0.067	0.301	0.038	0.365	0.110	-0.751	-0.093	-0.000
INF	-0.286	0.084	0.376	0.804	0.218	0.225	0.154	0.039	0.000
TR	0.459	-0.014	0.058	0.236	-0.157	-0.382	0.076	0.744	-0.000
G	0.371	-0.239	0.259	-0.148	-0.297	0.736	0.284	0.079	0.000
E	0.127	0.636	-0.158	-0.027	0.063	0.209	0.003	0.075	-0.706
SE	0.420	0.124	-0.026	0.372	-0.496	-0.238	0.038	-0.604	-0.000
S	0.417	-0.128	-0.152	-0.010	0.673	-0.109	0.527	-0.213	0.000

Appendix 3.9: Rotated Principal Component (Eigen Vectors)

	PC1	PC2	PC3
OR	0.012	0.090	0.813
R	0.258	-0.115	0.155
YB	0.067	0.590	0.256
INF	-0.101	-0.194	0.326
TR	0.501	0.196	-0.036
G	-0.149	0.635	0.009
E	0.258	-0.115	0.155
SE	0.744	-0.083	0.000
S	0.159	0.361	-0.344

Appendix 3.10: Result of Equal weight fragility and PCA Fragility.

YEAR	F(EWA)	F(PCA)	F(ECO)	F(SOC)	F(M&P)
1980	3.853904	4.135067	4.157138	3.24059	3.25545
1981	3.874452	4.231726	4.157174	3.24056	3.25545
1982	3.935038	4.576412	3.973152	3.240502	3.131418
1983	3.980352	5.191967	4.078736	2.786988	3.229284
1984	3.963303	4.963424	4.003008	2.128287	3.120598
1985	3.721628	5.187834	3.822535	1.124387	1.514765
1986	3.688275	4.945683	3.658703	-0.88853	1.490266
1987	3.731951	4.873219	3.987448	-8.62383	1.445511
1988	3.830834	4.68496	4.416823	0.461916	1.370866
1989	3.818322	4.633995	4.425247	1.561794	1.349503
1990	3.71024	4.842125	3.967443	2.218997	1.290197
1991	3.748312	4.994815	4.187486	2.692817	1.124137
1992	3.840832	5.711121	4.533216	3.06251	0.909743
1993	3.864053	5.46813	4.604104	3.356054	0.569165
1994	3.849831	4.609795	4.55364	3.590892	-0.15266
1995	3.864717	4.204183	4.579994	3.780405	-11.9246
1996	3.799711	4.772203	4.304705	3.937099	3.150023
1997	3.728739	6.067035	3.989141	4.068367	2.972761
1998	3.718707	5.27741	4.001547	4.176159	2.783411
1999	3.982388	5.998588	4.042702	4.261483	3.905946
2000	3.986528	5.703868	4.147075	4.326244	3.520557
2001	4.001128	5.576017	4.11187	4.373524	3.515675
2002	3.991526	5.721887	3.86121	4.406578	3.81072
2003	4.003926	5.895165	4.025115	4.427639	3.274075
2004	4.029094	5.797622	4.037691	4.438857	3.583448
2005	4.029928	6.099711	4.078024	4.442154	3.230967
2006	4.0266	6.571424	4.020148	4.438328	3.540122
2007	4.010573	7.004049	3.828524	4.428885	3.715644
2008	4.038491	7.038586	3.925329	4.417148	3.57726
2009	3.996928	6.742681	3.301173	4.407093	3.424768
2010	4.039223	7.133401	3.396796	4.40179	3.543604
2011	4.078895	7.602096	3.492794	4.402519	3.901093
2012	4.184288	8.27605	3.263135	4.40206	4.392044
2013	4.103782	8.013458	2.870664	4.455406	4.01081
2014	4.202718	8.469629	2.592633	4.497911	4.605167
2015	4.158741	8.384427	-2.23853	4.605174	4.564771

Appendix 4

$$Y_t = C_t + S_t \quad (4.1)$$

Where Y = income, C = consumption, S =savings and t = time-specific effects.

Based on classical economic notions of full employment, that assumes savings (S) and investment (I) to be equal, it can, therefore, be assumed that:

$$S_t = I_t \quad (4.2)$$

$$\text{Therefore: } Y_t = C_t + I_t \quad (4.3)$$

$$\text{Given that all income is consumed or saved: } S = sY \quad (4.4)$$

Where s = marginal propensity to save

$$I_t = sY_t \quad (4.5)$$

$$\text{Since } S = sY, \text{ therefore } C = (1 - s)Y \quad (4.6)$$

The capital accumulation equation can, therefore, be expressed as

$$K_{t+1} = I_t + K_t(1 - \delta) \quad (4.7)$$

Where K = capital δ = depreciation

$$\text{Therefore: } K_{t+1} = sY_t + K_t(1 - \delta) \quad (4.8)$$

The capital output ratio is symbolised as θ where $\theta = \frac{K_t}{Y_t}$

This equation can then be used in growth expression.

Changing the subject of formula of the capital-output ratio equation: $\theta Y_t = K_t$

Substituting this into the capital accumulation equation then gives:

$$\theta Y_{t+1} = sY_t + \theta Y_t(1 - \delta) \quad (4.9)$$

$$\text{By expansion: } \theta Y_{t+1} = sY_t + \theta Y_t - \delta \theta Y_t \quad (4.10)$$

$$\text{Therefore by solving: } \theta Y_{t+1} - \theta Y_t = sY_t - \delta \theta Y_t \quad (4.11)$$

$$\text{Dividing through by } \theta = Y_{t+1} - Y_t = \frac{sY_t}{\theta} - \delta Y_t \quad (4.12)$$

$$\text{Dividing through by } Y_t = \frac{Y_{t+1} - Y_t}{Y_t} = \frac{s}{\theta} - \delta \quad (4.13)$$

Therefore $\frac{Y_{t+1}-Y_t}{Y_t}$ which can be re-written as ΔY where Δ = change and it basically represent a proportionate change in output with respect to output this year, and can be termed the growth rate of output.

This, therefore, goes to provide the simple Harrod-Domar growth equation $g = \frac{s}{\theta} - \delta$ (4.14)

Where g = growth.

Kaldor (1961) however stressed that steady income per capita growth remains a fundamental

Drawing inspiration from the Harrod-Domar growth equation, the Solow model posits that output (Y) is a function of two inputs: capital (K) and labour (L).

Mathematically it is represented as $Y = f(K, L)$ (4.15)

Where $K > 0, L > 0$

The features assumed for this function includes a constant returns to scale, positive marginal productivity and diminishing marginal rate of substitution. A natural growth rate is assumed for labour, i.e., $n = \Delta L/L$, as a result of exogenous growth in the population. Capital (K) is in line with the Harrod-Domar capital accumulation assumption of $K_{t+1} = I_t + K_t(1 - \delta)$ where new capital stock (K_{t+1}) is a function of existing capital less depreciation ($K_t(1 - \delta)$) in addition to investment (I_t).

This is so due to the classical argument that income is either consumed or saved and that savings are invested ($S_t = I_t$). This is so by the classical argument of income is either consumed or saved, and that savings are invested ($S_t = I_t$). Therefore representing the fraction of income saved with constant s change in capital stock over a period of time can therefore be represented as

$$\Delta K = I - \delta K = sf(K, L) - \delta K \quad (4.16)$$

This equation, therefore, provides an explanation of capital accumulation process over time on the assumption of labour employment. Indeed the existence of labour is pivotal to the Solow model which provides a somewhat explanation for the diminishing marginal returns to capital, hence the need for a per capita approach to the Solow model.

Based on the capital accumulation equation earlier stated as: $K_{t+1} = I_t + K_t(1 - \delta)$ (4.17)

$$\text{This is be transposed to give } K_{t+1} = K_t(1 - \delta) + I_t \quad (4.18)$$

Since, investment is a product of savings rate and income, $K_{t+1} = K_t(1 - \delta) + sY_t$ (4.19)

Introducing labour as done by Solow 1956 then brings the argument as to output per capita and capital per capita which then gives the equation as: $\frac{K_{t+1}}{l_{t+1}} = \frac{K_t(1-\delta)}{l_t} + \frac{sY_t}{l_t}$ (4.20)

This gives $\frac{K_{t+1}}{l_{t+1}} = (1 - \delta)k_t + sy_t$ (4.21)

Where k represents capital per capita, and y represents output per capita.

Due to the difference in $t+1$ and t , the left-hand remains unsolved. In solving this, multiply it by l_{t+1}/l_{t+1}

This gives $\frac{K_{t+1}}{l_{t+1}} \frac{l_{t+1}}{l_t} = (1 - \delta)k_t + sy_t$ (4.22)

We therefore now have equation in per capita as $k_{t+1} \frac{l_{t+1}}{l_t} = (1 - \delta)k_t + sy_t$ (4.23)

Labour growth therefore is $\frac{l_{t+1}}{l_t} = (1 + n)$ (4.24)

Therefore: $k_{t+1}(1 + n) = (1 - \delta)k_t + sy_t$ (4.25)

This equation can, therefore, be explained that capital stock per capita of the next period (k_{t+1}) is a result of the current capital stock left after depreciation ($(1 - \delta)k_t$) in addition with the unconsumed portion of output (sy_t) which becomes investment on the notion that investment is a product of savings rate and income. The model however assumes constant labour growth, hence the need for a proportionate capital stock as labour increases to ensure constant capital per capita stock. This continues to a stage where newly accumulated capital per period is just adequate in maintaining capital stock per capita constant (k^*), and an output per capita constant (y^*). This steady state can be explained to be a situation where individual variables of the model are all growing with a constant rate over time.

This can be represented as $k_{t+1} = k_t = k^*$ and $y_{t+1} = y_t = y^*$ (4.26)

Therefore at steady state, $k^*(1 + n) = (1 - \delta)k^* + sy^*$ (4.27)

By solving, $k^*(1 + n) - (1 - \delta)k^* = sy^*$ (4.28)

$$(n + \delta)k^* = sy^*$$

$$k^* = \frac{s}{(n + \delta)} y^*$$

$$\text{This can be alternatively written as } y^* = \frac{(n+\delta)}{s} k^* \quad (4.29)$$

This steady state, therefore, connotes that constant output growth leads proportionate growth in capital stock and investment, implying a constant capital-output ratio, on the assumption of

$I_t = sY_t$ and $K_{t+1} = I_t + K_t(1 - \delta)$ explaining growth in capital stock.

$$Y = T(t)f(K, L) \quad (4.30)$$

Where $T(t)$ is the accumulation of shifts in the production function over time, Y is output and K and L inputs capital and labour respectively.

The MRW 1992

Assuming a given country at time t , with an output Y_t and inputs labour L_t and accumulated factors of types: K_t , H_t . The inputs: H_t and K_t accumulated by the sacrifice of current output, and are human and physical capital. It assumes advancement in technology through human capital through learning by doing process under the assumption that it is accumulated as an economic activity by product which does not require current output sacrifice. The combination of these inputs, therefore, gives output, in line with the constant returns to scale cobb-Douglas form. The model kicked off with the textbook statement of Solow.

$$Y_t = K_t(A_t L_t)^{1-i} \quad (4.31)$$

Where Y = total income, K = capital stock, L = Labour and A = technology parameter.

MRW augmented this textbook by introducing a symmetrical introduction of human capital as physical capital H which then gives

$$Y_t = K_t^\alpha H_t^\beta (A_t(L_t))^{1-\alpha-\beta} \quad (4.32)$$

By expansion:

$$k_t^0 = s_k y_t - (n + g + \delta)k_t \quad (4.33)$$

$$h_t^0 = s_h y_t - (n + g + \delta)h_t \quad (4.34)$$

Where 0 = change rate and δ = proportionate depreciation rate to capital. Capital savings rate but physical and human are s_k and s_h respectively, $h = H/AL$, $k = K/AL$ and $y = Y/AL$.

Steady state equations therefore are:

$$k^* = \left(s_k^{1-\beta} s_h^\beta \right) / (n + g + \delta)^{1/(1-\alpha-\beta)} \quad (4.35)$$

$$h^* = (s_k^\alpha s_h^{1-\alpha} |n + g + \delta|)^{1/(1-\alpha-\beta)} \quad (4.36)$$

By substitution and log taking, production function for income per capita becomes

$$\ln\left(\frac{Y_t}{L_t}\right) = \ln A(0) + g_t - \frac{\alpha+\beta}{1-\alpha-\beta} \ln(n + g + \delta) + \frac{\alpha}{1-\alpha-\beta} \ln(s_k) + \frac{\beta}{1-\alpha-\beta} \ln(s_h). \quad (4.37)$$

In the work of Mankiw Romer and Weil, (1992) the saving rate of capital s_k was proxy by share of investment in GDP, the savings rate of human capital was proxy by the fraction of the labour force that are enrolled in secondary school. A straight forward development economist perspective is such as sees capital as an essential criterion for growth to occur irrespective of the source of such capital (Waheed, 2004). Other studies in modelling growth and indeed capital in developing economies have broken down capital to reflect these two forms of capital both foreign and domestic (Akinlo, 2004; Ayanwale, 2007; Driffield and Jones 2013; Adeniyi, 2015) .

Endogenous Growth

The perfect competition models assume a return to scale that is constant as well as production factors are covered for by marginal products, i.e., all output is exhausted by factor payments: $Y = F_k K + F_l L$ (4.38)

where: Y =Output, $F_k K$ and $F_l L$ are for capital and labour factor inputs receipts respectively.

Cobb-Douglas aggregate production functions as:

$$Y_t = AK_t^\alpha L_t^\beta \quad (4.39)$$

Where Y = total income, K = capital stock, L = Labour and A = technology parameter. No restrictions are placed on coefficients α and β as against the exogenous assumption $\alpha+\beta=1$.

These models, however, assume saving to be a constant fraction of gross income in an economy. The growth in stock of capital can, therefore, be represented as

$$K_t = sAK_t^\alpha L_t^\beta - \delta K_t. \quad (4.40)$$

Assuming that labour force maintains a constant growth,

$$n = \Delta L/L \quad (4.41)$$

Therefore, growth in stock of capital per capita can be represented as

$$\Delta k_t = sAK_t^\alpha L_t^{\beta+\alpha-1} - (\delta + n)k_t \quad (4.42)$$

$$\frac{\Delta k_t}{k_t} = sAK_t^{\alpha-1}L_t^{\beta+\alpha-1} - (\delta + n). \quad (4.43)$$

The Rebelo Growth Model

Two major assumptions of the Lucas-Uzawa Model are:

Assumption1: That agent expends their time resource between educational ventures and production process.

Assumption 2: that production is a function of both individual (internal) and aggregate (external) input. Where, individual inputs incorporated physical and human capital and aggregate incorporated aggregate human capital.

$$K_t = K_{dt} + K_{ft} \quad (4.44)$$

Waheed (2004) however, argued further that capital deficient country majorly developing economies of sub-Saharan Africa, and Asia have largely relied on foreign capital to supplement domestic capital to fast-track their growth.

Appendix 5

Appendix 5.1: Lag Length Selection for Co-integration

Endogenous Variables: Y DK FDI REM ODA MS LGE

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-124.8857	NA	6.98e-06	7.993073	8.310514	8.099882
1	27.95910	231.5830	1.38e-08	1.699449	4.238976*	2.553922
2	89.17028	66.77584*	1.02e-08	0.959377	5.720992	2.561515
3	175.4614	57.52743	4.44e-09*	-1.300693*	5.683009	1.049111*

Endogenous Variables: Y DK FDI REM ODA MS GE F(EWA)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-201.9811	NA	4.65e-05	12.72613	13.08892	12.84820
1	-31.86029	247.4485	8.38e-08	6.294563	9.559671	7.393173
2	69.64228	98.42673	1.84e-08	4.021680	10.18911	6.096831
3	327.5234	125.0333*	2.52e-12*	-7.728690*	1.341053*	-4.676997*

Endogenous Variables: Y DK FDI REM ODA MS GE F(PCA)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-146.4625	NA	1.61e-06	9.361363	9.724152	9.483430
1	24.46604	248.6233	2.76e-09	2.880846	6.145953	3.979455
2	118.2610	90.95264	9.69e-10	1.075094	7.242519	3.150244
3	320.1251	97.87351*	3.95e-12*	-7.280307*	1.789436*	-4.228615*

Endogenous Variables: Y DK FDI REM ODA MS GE F(ECO)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-252.5934	NA	0.000998	15.79354	16.15633	15.91560
1	-72.93911	261.3153	1.01e-06	8.784188	12.04930	9.882798
2	16.75137	86.97259	4.55e-07	7.227190	13.39461	9.302341
3	283.8596	129.5070*	3.56e-11*	-5.082400*	3.987343*	-2.030708*

Endogenous Variables: Y DK FDI REM ODA MS GE F(SOC)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-242.8884	NA	0.000554	15.20536	15.56815	15.32743
1	-32.04690	306.6786	8.47e-08	6.305873	9.570980	7.404482
2	56.88715	86.23907	4.00e-08	4.794718	10.96214	6.869869
3	313.8581	124.5920*	5.78e-12*	-6.900492*	2.169251*	-3.848800*

Endogenous Variables: Y DK FDI REM ODA MS GE F(M&P)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-200.0442	NA	4.13e-05	12.60874	12.97153	12.73081
1	-31.07697	245.7705	7.99e-08	6.247089	9.512196	7.345698
2	69.17558	97.21459	1.90e-08	4.049965	10.21739	6.125116
3	306.5432	115.0873*	9.00e-12*	-6.457165*	2.612578*	-3.405472*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

